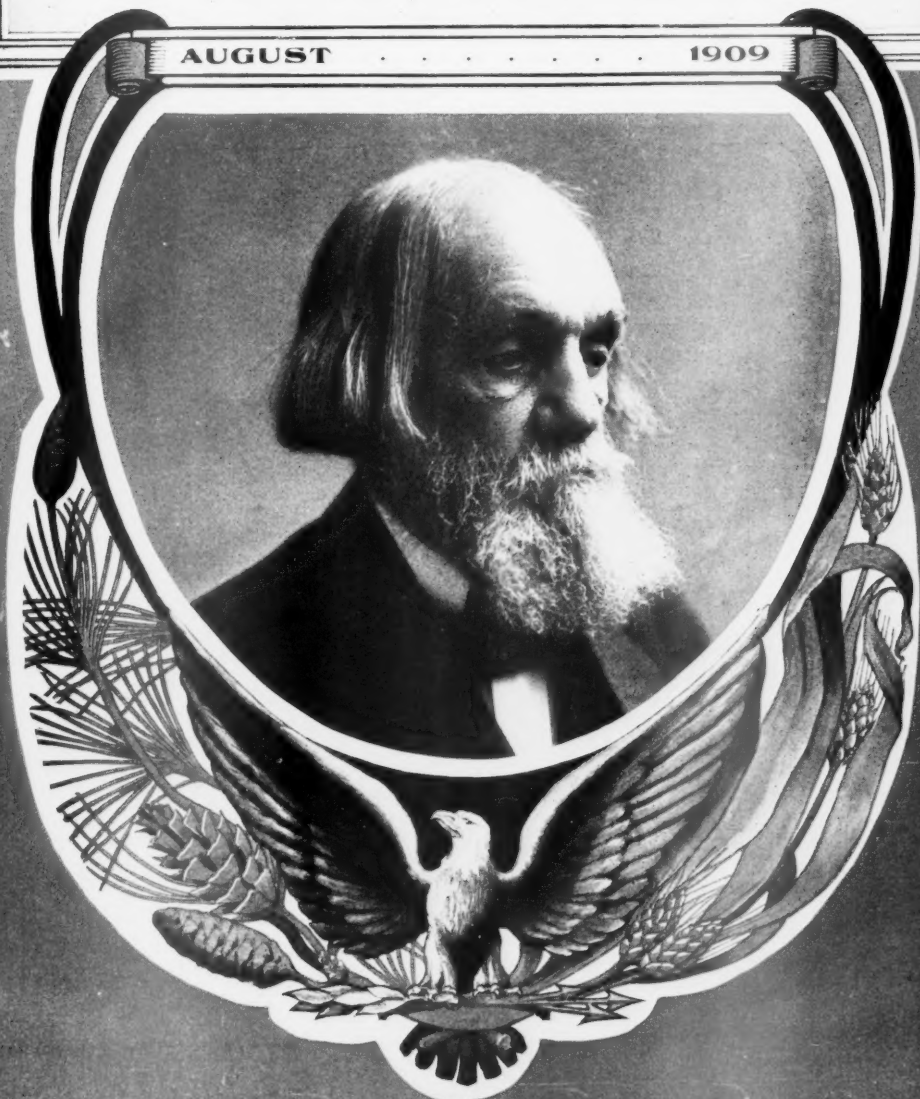


Conservation

Forests, Waters,
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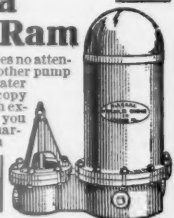
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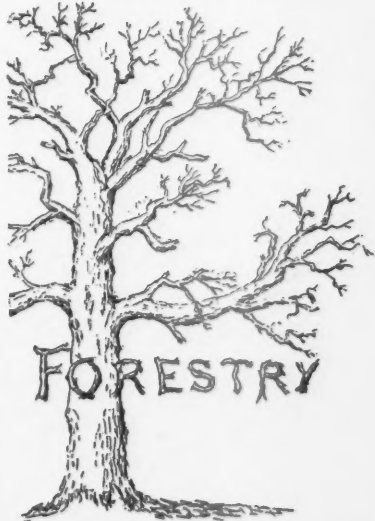
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The American Forestry Association was organized in 1882, and incorporated in January, 1897. It now has over 7,000 members, residents of every State in the Union, Canada, and foreign countries. From its organization it has been the tireless friend of the forests.

The object of the Association is to promote the preservation, by wise use, and the extension of the forests of the United States; its means are agitation and education; it seeks to encourage the application of forestry by private owners to forest holdings, large or small; and it favors, especially, the establishment and multiplication of National and State forests, to be administered in the highest interests of all.

The Association seeks as members all who sympathize with its object and methods, and who believe that our natural resources constitute a common heritage, to be used without abusing and administered for the common good. Seeking to conserve our supplies of wood and water, the Association appeals especially to wood-producers and users, including owners of wood lands, lumbermen, foresters, railroad men, and engineers; and to those dependent upon equable stream flow, as manufacturers, irrigators, employers of water power, and those engaged in internal commerce.

The Association meets annually in Washington. It publishes, monthly, *CONSERVATION*, the magazine of authority in its special field. The list of contributors to this publication includes practically all persons prominent in forest work in the United States, making it alone worth the cost of Annual Membership in the Association.

The dues, covering a subscription to *CONSERVATION*, are as follows: Annual—For Annual Members, \$2; for Sustaining Members, \$25; Total, with exemption from all other payments—for Life Members, \$100; for Patrons, \$1,000. Of the above amount, \$1 is set aside each year to pay the subscription of each member to *CONSERVATION*.

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CONSERVATION

OFFICIAL MAGAZINE
OF THE
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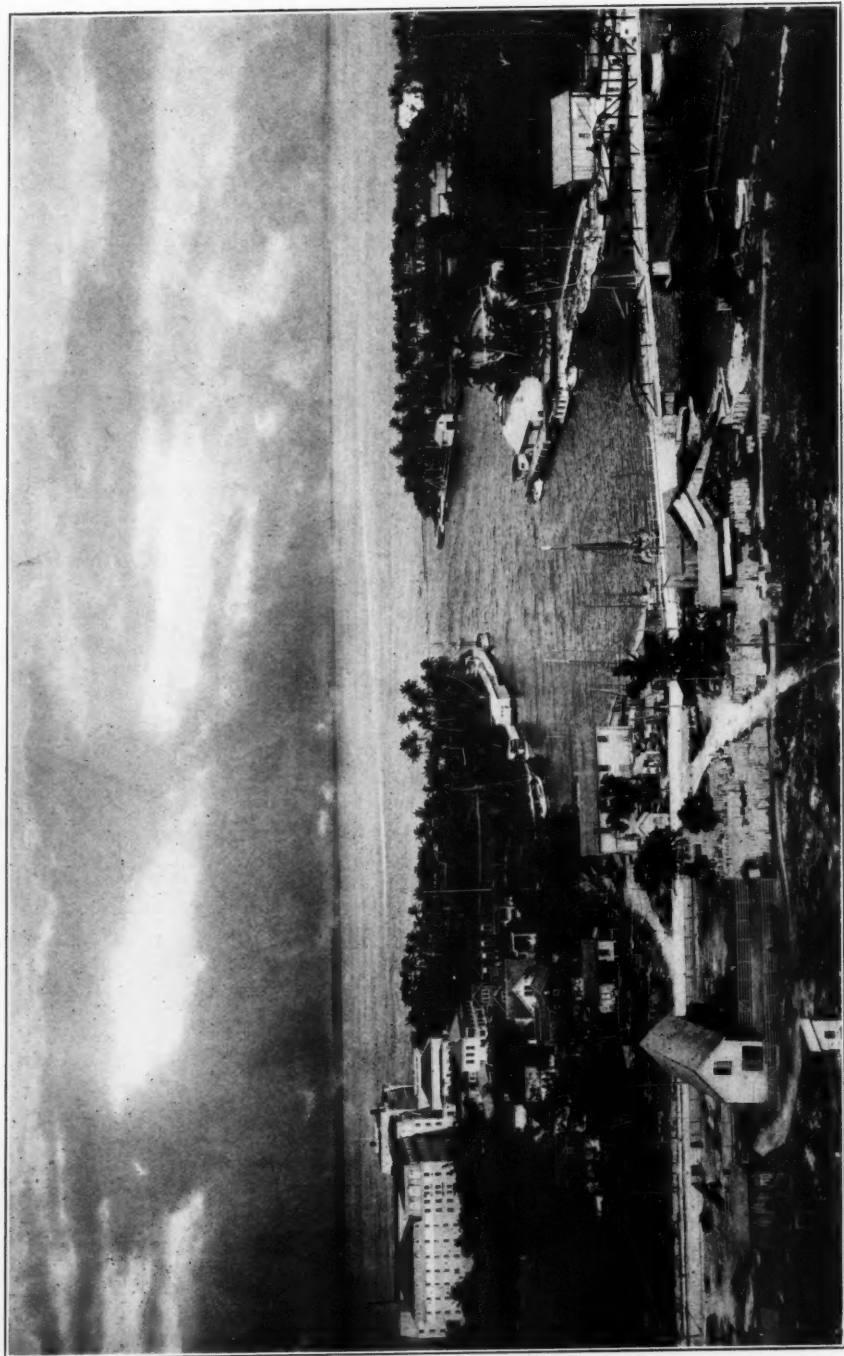
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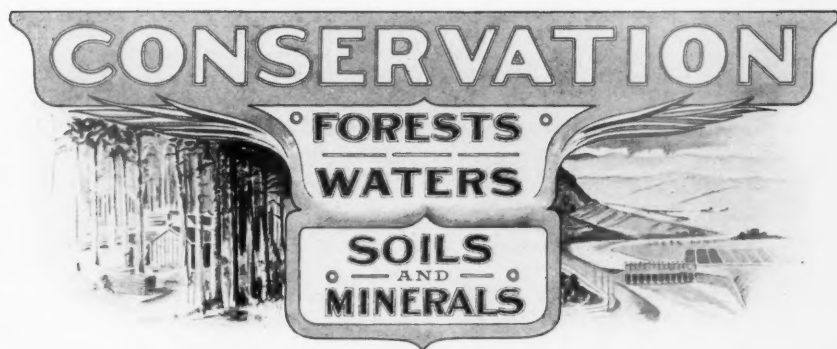
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WASHINGTON, D. C.



Mouth of the Miami River

PHOTO BY KAUFMAN, MIAMI, FLA.



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AUGUST, 1909

No. 8

THE EVERGLADES OF FLORIDA AND THE LANDES OF FRANCE

By DR. JOHN GIFFORD
Founder of The Forester (Later, Conservation)

DURING a recent visit to the great work of reclamation now in progress in the Everglades of Florida, I was impressed with its resemblance in many respects to the great work the French have accomplished in the Landes of France, and with the fact that ex-Governor Broward, after many trials and tribulations, is succeeding, just as did the French engineers after similar troubles. The drainage of the Everglades is now well under way, and almost every unprejudiced person who visits this work becomes an enthusiastic convert. Just as the French engineers practically added a new province to France, Broward has been instrumental in promoting a work which will convert a vast, useless waste into what promises to be the most productive part of Florida, if not the most productive area of land of equal size in the whole United States of America. This drainage is being done at the insignificant cost of about \$1 per acre; and when done the land will be ready at once for the plow and for the produc-

tion of tender crops, the like of which cannot be produced elsewhere in the United States, and at a time when the rest of the country is frost-bound. This is no small area; it is many miles in extent, and is capable of yielding, at small outlay, enormous crops of the most delicate tropical products, as well as northern vegetables in mid-winter. A visit to this region, even at this time, at the very beginning of the work, since it is a colossal task, will convince the most skeptical person that this is no idle dream or wild land scheme, but a feasible, practical piece of good business. After inspecting this work, one naturally wonders why it was not done long ago. It is not a complex engineering problem; it is merely a matter of digging, so that the water in this great Everglade basin can flow into the sea. Behind the giant maws of these dredges which, when they work day and night, are literally eating their way through rock, mud and sand at the rate of a mile a month per dredge, there are left broad, navigable canals, which are



A Native of the Landes on Stilts

comparable only to those of Holland, and which will afford miles of placid water courses, avenues of traffic for the products of the land, and a never-ending source of enjoyment to pleasure craft.

In the case of the Everglades, the exit of the water to the sea is prevented by a limestone rim. In the case of the Landes it was due to a bank of wind-blown sand, which clogged all outlets to the sea. The resemblance of the two conditions is much closer than is at first apparent, since this very rock rim was once, no doubt, limestone sand blown in by the wind and later hardened into rock. I think geologists now

generally recognize that this rocky rim is of eolian formation. The main difference between the two propositions is that, in the case of the Landes, it was silicious sand, which did not harden into rock, but remained mobile, shifting back and forth with every caprice of the wind, while, in the case of the Everglades rim, it was limestone sand, which soon hardened into solid limestone rock. As in sand dunes, the wind laminations show in the rock like leaves in a book, recording forever the character of its formation.

Before further describing the Everglades, let me quote from my notes made a few years ago, while visiting the

Landes of France. Not only are the physical conditions similar, but there was the same opposition at the start. As in the case of the Everglades, the work in France was pushed by the personal initiative and persistency of one or two men, and the method of securing the funds for the purpose was very much the same. In the early part of this century (before 1857), the condition of the flat, triangular plain known as the Landes, which is roughly bounded by the Bay of Biscay, the River Adour and the River Garonne, and the Medoc, was, in brief, as follows: There were miles of marshy, almost treeless wastes, covered mainly with a low growth of herbage. It was wet, unhealthy and sparsely inhabited. The few people who lived there depended upon their flocks. The accompanying picture shows a native of the Landes standing upon stilts, watching his sheep. He is dressed in a heavy sheepskin paletot. By standing on stilts, these shepherds can easily see their sheep in the bushes and grass, and can easily follow them through wet and marshy regions. Their spare time is spent in knitting stockings. The con-

dition of the Landes is due to the immense sand dunes, which arrayed themselves along the shore of the Bay of Biscay. They moved inland, covered villages and occluded inlets. Bremon-tier tells of a dune which advanced in a violent tempest at the rate of two feet in three hours. The damage done by these moving sands so increased that the government officials studied the work and devised and executed plans; and now, thanks to de Villers, Cham-brelet and Bremon-tier, the pioneer workers, the Dunes and Landes are covered with a beautiful growth of the maritime pine. The region is now a famous health resort, combining the beauties and pleasures of the seashore with those of a well-managed pine forest, which extends almost to the edge of the ocean.

There are evidences that originally the Dunes were fixed naturally by forests. These forests were destroyed by vandals, and all attempts to stop these menacing mountains of sand failed. In 1778 a talented engineer, Baron Charlevoix de Villers, was sent to Arcachon for the purpose of forming a military post.



Forest of Maritime Pine on the Dunes in Gascony. The White Sand in the Foreground Is the Edge of the Fire-line



A Typical Everglade Scene Ten Miles South of Lake Okechobee

He saw at once the necessity of fixing the sand, and was, according to Grandjean, the first to establish the fact that the way to fix the Dunes is by means of plantations of pine. He met with troubles in his work, and was finally sent back to the Island of Santo Domingo.

In 1784, Bremonnier began the work, and it is said that, by using the results of de Villers' labors, he finally succeeded in fixing the moving sand.

The fixation of the Dunes rendered possible the work of M. Chambrelent, which was the reclamation of the Landes by drainage and plantings. It is a unique example of personal initiative. M. Chambrelent, a young engineer in the Department of Bridges and Roads, in 1837, was sent to the Gironde to study the drainage of 800,000 hectares of land in the districts of Gascony and the Landes. His conclusions were not accepted, so he bought some land and put in effect the measures he advocated. In 1855, the results of his experiments were submitted to an international jury. The jury was so favorably impressed that it recommended the application of Chambrelent's plans

for the entire region, and in 1857 a law was passed requiring the Communes to do this work. The Communes paid for it by selling a part of this land, which increased in value after the completion of the work. This region was 100 meters above sea level, flat and sandy. It was underlain with a hardpan called "alios." In summer it was a bed of burning sand, in winter in a state of constant inundation, while between the two was a period of pestilence. The country was characterized by sterility and insalubrity.

A complete system of drain ditches was dug and the seeds of pine were sown. In 1865 all works of drainage were complete. By the fixation of the Dunes and the drainage of the Landes 650,000 hectares of land were made productive. Formerly, if one wished to buy land he mounted a hill and called in a loud voice; the land over which his voice carried was worth 25 francs. "A man," says Grandjean, "was forced to take some of this sand for a debt. He became a millionaire later by selling it in small parcels." The first summers, the visitors lived in the rosin-gatherers' cabins; now every luxury is



Indian Family in Canoes on Miami River

afforded the 200,000 tourists who come there every year. In the Landes a man could buy a farm for a few francs, but it required over two acres to support one sheep. In less than a century the population sextupled, while that of a large part of the rest of the country either remained stationary or decreased. The fecundity of the French in places where there is plenty of room and opportunity is proverbial, as in Canada; it is even so in the Landes, which, on being reclaimed, was equivalent to a new province or colony.

All along the east coast of Florida there are dunes of snow-white sand covered with scrub pines and palmettoes. This fine, white, silicious sand, although naturally sterile, is excellent for the growth of pineapples in regions where there is sufficient warmth. Mile after mile of this sand along the line of the railroad between the Everglades and the sea is used in the cultivation of pineapples, which are fed a balanced ration of fertilizer, just as cows are fed a balanced ration of feed for the production of high-grade milk.

This great Everglades basin, extend-

ing from Lake Okeechobee to Miami and westward to the Gulf of Mexico, contains 3,000,000 acres, more or less. The whole cultivated area of the state of Florida is estimated at only about a million acres. The Everglades are larger than Porto Rico or Jamaica and as big as Rhode Island and Delaware combined. This great area is mainly confined by dunes of sand and ridges of limestone rock. These ridges, like fingers, project into the Everglades and are usually covered with pine. Between these ridges are small glades on the edge of the main or "big glade." The accepted definition of a glade is a narrow strip of grassy land between forests. Glade refers to a grassy area. The big glade is all or "ever" glade. In this way, no doubt, the term Everglade originated. Here and there in the Everglades are islands covered with rich jungle or hammock hardwood growth. On these islands the Seminoles cleared small areas, where they raise their crops.

We visited the Everglades from Fort Lauderdale. It was after a long period of heavy rains, and the mosquitoes



Camp on Caloosahatchee River

were bad in the pine woods. We ascended the New River, a beautiful, winding stream, generally deep, but very deep in places, one spot having a depth of eighty-five feet. The banks were quite low and sandy and lined with moss-draped cypress, oak, maple, magnolia, cocoa plum, pond apple, etc. After a short ride we reached the beginning of the drainage work—one long canal ran northwestward, with the dredge Everglade at its head, hard at work; another due westward, with the dredge Okechobee at its end at work. These canals will run about twenty miles out into the glade and will be met by a canal running north and south from Lake Okechobee to a point about twenty miles west of Miami. The dredge Miami is now at work at the head of the Miami River; another dredge is at work on the west coast, opening the old Disston Canal into Lake Okechobee.

As these canals are finished, dams are made to hold back the water to facilitate dredging, showing rather a surprising amount of fall and how ef-

fective these canals will prove in discharging the floods of water from this big area. I understand that the Government will permit the level of Lake Okechobee to be lowered only four feet, since a Federal appropriation has been made to dredge the Kissimee River, which empties into the northern part of the lake.

There were no mosquitoes in the Everglades during our visit, and crops already growing on the land, owned by eager settlers, show what can be done on land only partially drained.

Western capitalists mainly have bought this land; the money from the sales is doing the work, and the further it progresses the more the land will bring and the more eager people will be to get hold of it. The Board of Internal Improvement is wisely holding back much of the land from sale, knowing full well that as time goes on it will increase in value and thus yield ample funds for the continuation of this important work. In many cases the state has sold only the alternate sections.



Canal with Dam to Raise Water to Float Dredge



An Everglade Canal below the Dam, Showing the Amount of Fall

PHOTO BY KAUFMAN



Everglades Lands after Drainage



A Home in the Everglades after Reclamation



A Miami Palm Garden

There are agents at work selling this land in every state in the Union. Men of wealth and influence are behind this project. If any one doubts its feasibility, he should come to Florida and see with his own eyes. Much praise is due ex-Governor Broward for his work in this line, and in the years to come he will shine forth as the governor who really did something to add to the productivity and worth of his state. The man who makes two blades of grass grow where only one grew before is the proverbial public benefactor; but the man who, by his energy and foresight, inaugurates a movement to render 3,000,000 acres of waste land highly productive deserves endless commendation in this day, when we talk so much about the conservation of nature's resources. Mr. Broward is a masterful promoter; the keynote of his campaign was drainage; he worked at it incessantly while in office, and he has been working at it ever since, and has made good.

We must not forget that this recla-

mation is in a land of perpetual summer in the only part of the mainland of the United States which is truly tropical, and where the productive capacity of the land is many times greater than in northern climes; where not only a greater quantity, but a much greater variety of crops can be produced than elsewhere in this country.

This may be far-fetched, but I can picture in my mind's eye long avenues of Eucalyptus, Australian pine, and Royal palms along these canals; great masses of Hibiscus, Allamanda, Oleander, Bouganvillea, Poinciana, and countless other resplendent ornamentals around thousands of neat homes surrounded by fields of peppers, tomatoes, eggplants, celery, onions, okra, arrowroot, tobacco, etc.; also, no doubt, orange and grapefruit groves, as well as choice mangoes, avocados, and other tropical fruits. The canals filled with boats will lead to Miami and Biscayne Bay, the Arcachon and Biscay of Florida.

The land of the moccasin, alligator and Seminole will see a great transformation in a very short time—it does not take long in a tropical country, especially on land where there is no forest to clear.

It is more than a drainage scheme, since by means of dams and locks the water table may be kept at all times just where it is needed for irrigation purposes. The land is level, fertile, and free from alkali and other injurious minerals. The canals serve the triple purpose of drainage, irrigation, and transportation.

The soil is usually a black muck, in places several feet in thickness; under this is usually a layer of marl; under the marl, sand, and under the sand, limestone rock. There is considerable mineral matter mixed with this muck, and, although it will shrink some, I doubt if the shrinkage will ever prove a serious drawback. By the application of lime, the cultivation of legumes, etc., this soil can be kept at a maximum state of fertility, so that five acres

would be ample for the support of an ordinary family.

Throughout the Everglades there are large springs, fed, no doubt, by a watershed far up the state. This water is usually heavily charged with lime, which is deposited on the surface of everything in a fine, flocculent state during the period of overflow. This deposit, added to the muck, no doubt, contributes much to the quality of the soil. There are deposited also the shells of many fresh-water mollusks. In short, with the fertile, easily-worked soil, an abundance of water for irrigation, a tropical, healthful climate, canals for transportation purposes, and all within easy access, by both water and land, to our great northern markets, there is a combination of favorable conditions which probably cannot be equaled elsewhere in the whole world.

And lo! the poor Seminole; what of him? At best, he is merely a renegade; and the time will soon come when he will have to put on pants and go to work on the land, join his relatives in Oklahoma, or die from the effects of too much bad whisky.





Where the Waters of the Columbia and the Spokane Meet in the Spokane Indian Reservation



South End of Coeur d'Alene Lake

OPENING OF THE COEUR D'ALENE RESERVATION

THE Coeur d'Alene Indian reservation in northern Idaho, 200,000 of whose 400,000 acres of agricultural, grazing and timbered lands will be distributed among homesteaders by the Government lottery plan at Coeur d'Alene, beginning on the morning of August 9, is one of the three reserves in the Inland Empire to be opened this year. The other two are the Spokane, in eastern Washington, 6,000 acres of agricultural lands, and the Flathead, in western Montana, with 450,000 acres of agricultural and grazing lands.

Those eligible to settle on this land must register at either Kalispell or Missoula, Mont. Registration will begin on July 15 and continue until August 5. All applications for registration must be mailed in a plain envelope, three and one-half by six inches, to James W. Witten, superintendent of opening, Coeur d'Alene, Idaho.

The passing of the reserve from the hands of the historic tribe of white settlers marks an epoch in the annals of the Northwest; its settlement next April means homes for from 7,000 to



in Reservation of the Same Name

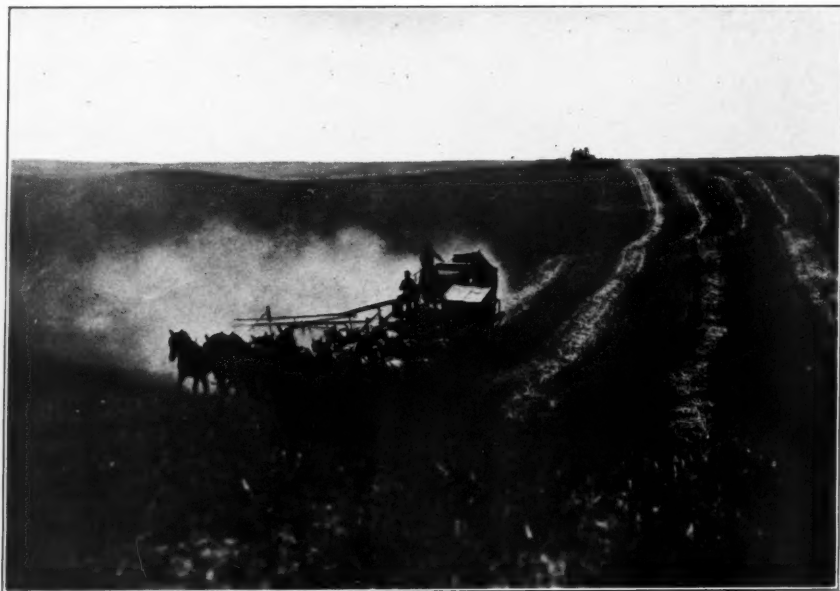
10,000 persons, probably many of them from crowded cities in the East, and the development of the lands will add several millions of dollars annually to the wealth production of the Inland Empire.

The reservation has an interesting history, dating from the early '30s, when French-Canadian employes of the Hudson Bay Company stirred up among the untutored reds a desire for the coming of "Black Robes," as the missionaries were known in those days. Fathers De Smet, Gregory, Mengarini, and Nicholas Point, accompanied by Brothers Specht, Huet, and Claessens, came from St. Louis in 1841 and lived among the Indians. They founded their first mission in the Bitter Root Valley in Montana near the site of the present town of Stevensville, where they afterward erected a church and parish house, and cultivated the land. Several years

later Father Joset joined the band of workers, and the Coeur d'Alene mission was established.

Father Joset became superior of the Rocky Mountains mission, which, in 1907, was united with the California mission. It is headed by Rev. Father George de la Motte, of Spokane, whose jurisdiction now embraces the states of California, Oregon, Washington, Idaho, Montana, Wyoming, the Dakotas and southern Alaska, an area of 900,000 square miles.

In the early days some of the Indians, then in their prime, were looked upon as "medicine men," endowed with supernatural power, and, consequently, of great influence among their fellows. When the priests began their work they condemned that superstition, and the medicine men gradually lost their power and influence. Old and young to-day



Harvesting on the Flathead Reservation near Kalispell, Mont.

are devout adherents of the Roman Catholic religion. The men devote themselves to athletic sports and games between the ceremonies, being especially fond of baseball and horse-racing. Indian officers maintain a vigilant police system, and offenders are punished by imprisonment in the jail at De Smet. Drunkenness is not tolerated.

The reservation is situated wholly in Kootenai County, Idaho, and contains approximately 625 square miles, or 400,000 acres of land, of which two-thirds is cultivated and capable of high development. The rest is heavily timbered with white and yellow pine, cedar, fir, and tamarack, and is subject to entry under the homestead laws at its appraised value. The cost of these lands has not yet been determined. While the principal crops produced are wheat, oats and hay, the soil has proved itself to be admirably adapted to the cultivation of potatoes, sugar beets, and other root crops, also tree and vine fruits.

The Indian population of the reservation is 500 Coeur d'Alenes, of whom

255 are males. There are also ninety-seven Spokane Indians. A census taken early this year shows the sexes are nearly evenly divided. These people each own 160 acres of land, and have 2,500 head of horses, 1,200 cows, 600 hogs, and 175 sheep. The reserve is traversed by the Chicago, Milwaukee and Puget Sound Railroad and the Tekoa-Burke branch of the Oregon Railroad and Navigation Company, the latter carrying all members of the Coeur d'Alene tribe free of charge between Tekoa, Wash., and Cataldo, Idaho, fifty-seven miles, as the result of a contract made when the Harriman people secured a right-of-way across the reserve in 1889.

Pierre Wildshoe, chief of the tribe, and successor of Andrew Seltice, who died in 1902, while not the wealthiest, is one of the most respected and influential men on the reservation. Pierre Moctielma is sub-chief, and John Davenport, who was raised by a white merchant of the same name at Colfax, Wash., is head of the Indian police.

They are respected by all who know them.

Louis Mitchata is, probably, the wealthiest of the Coeur d'Alene Indians. He is reputed to be worth at least \$15,000, of which \$8,000 is in money at interest. He lives in a house which would be no discredit to any farmer in the country, and has a good barn for stock, and convenient outbuildings. A grove of trees surrounding a large fishpond is a pretty feature of the premises. Lo-lo, who lives near the Government sawmill, a few miles east of the mission, has possessions in live stock and cash to the amount of \$10,000. Chief Wildshoe is worth \$6,000, and others have from \$1,500 to \$5,000.

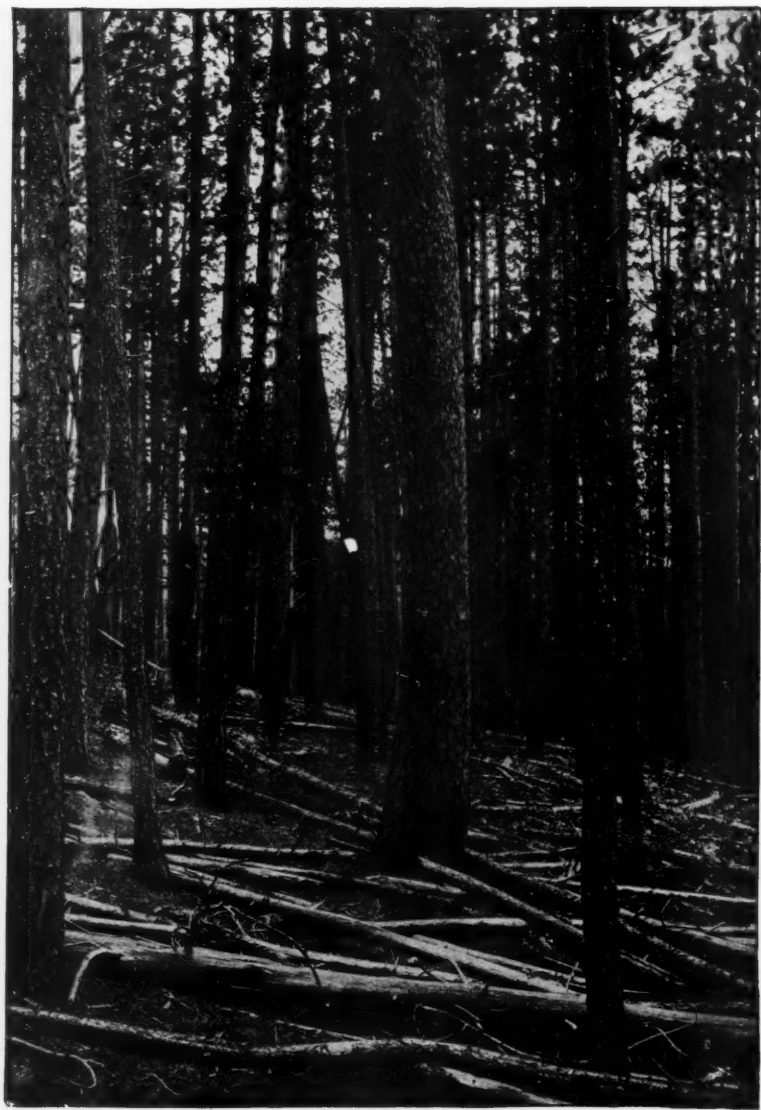
The great age reached by a number of these people is a matter of interest. Father Caruana, of De Smet mission, says that Charles, who died there a few years ago, was not less than 120 years old. He was totally blind years be-

fore his death, and was waited on by his daughter, who died later, deaf and blind, at the age of ninety years. Coona-Cha, a Coeur d'Alene squaw, died recently at the age of ninety-six years, and Victoria, of the same tribe, is supposed to be in her ninetieth year. Scamtal-am-to, a Spokane squaw, who lives on the reservation, is ninety-one years old. There are several others past the four-score period.

It is announced by James W. Witten, superintendent of the opening, who will arrive at Coeur d'Alene on July 5, that no charge will be made for registration, but at the time of making entry in April, 1910, persons who take lands in the Flathead reservation must pay one-third of the appraised value, and those who apply for either Coeur d'Alene or Spokane lands must pay one-fifth of the value. The remainder may be paid in five equal annual instalments.



Conveyance of Water for Irrigation in Stave Pipes. Old Flume and New Redwood Stave Pipe Replacing It, Redlands Canal, California



View in the Black Hills Forest Reserve, Showing Average Stand of Timber

INFLUENCE OF TAXATION ON FOREST DISTRIBUTION

By E. M. HOOVER, Boise, Idaho, Delegate from Idaho to the White House Conference, May 13, 14 and 15, 1908

THE importance of the conservation of the forests of private individuals and of holdings outside of the National Forests, is greater than that of the conservative management of the National Forests. The reasons are that the private holdings are more accessible for cutting and are in an altitude below the permanent snow line; they are, therefore, located where the forest covering delays the melting snow and retards the runoff of rainfall.

The lumberman does not, from any influence of greed, willingly destroy his

own property or endanger the welfare of the future. He acquires large tracts of timber land in order to be assured of a timber supply that will justify the construction of mills, roads and river improvements and the expenses of logging, thus taking only a reasonable business precaution.

The lumberman would prefer to make his timber supply permanent. He is absolutely prohibited from so doing by the present methods of taxation of timbered lands. The taxes are assessed on both the land and the growing tim-



A Southern Pine Forest, Showing Path of Destructive Fire after Lumbering

ber; and, in many cases which I could cite, on a valuation exceeding the cost or the present actual value. To avoid disastrous business results, his only alternative is to cut the timber off clean, and as fast as he can; otherwise, the increasing taxes, added to the expense of caring for the property, the destruction of timber by fire, storms and insect depredations, place an absolute prohibition on any system of reforestation or conservative lumbering.

To fair-minded men there is a reason, as well as an obvious necessity, for the immediate adoption of measures that will conserve the timber resources of the Nation and render them permanent for the general good; but the timberland owner who can reap but one crop in a lifetime should not be called upon to bear a disproportionate share of the resulting burden.

In an instance with which I am familiar the timbermen in a county, actually owning five per cent of the area of the county, are assessed on forty-nine and one-half per cent. of all the lands on the assessment rolls, and they pay seventy per cent. of the tax revenue from the item of "lands" and thirty-eight per cent. of the entire county revenue from all sources.

There is a National Forest in that county comprising about twenty-five per cent. of the area of the county. The timbermen's tax amounted to over 150 times as much per acre as the county received from the National Forest. The Forest Service could not hope to continue its present invaluable work if it were obliged to carry such an item of fixed charges.

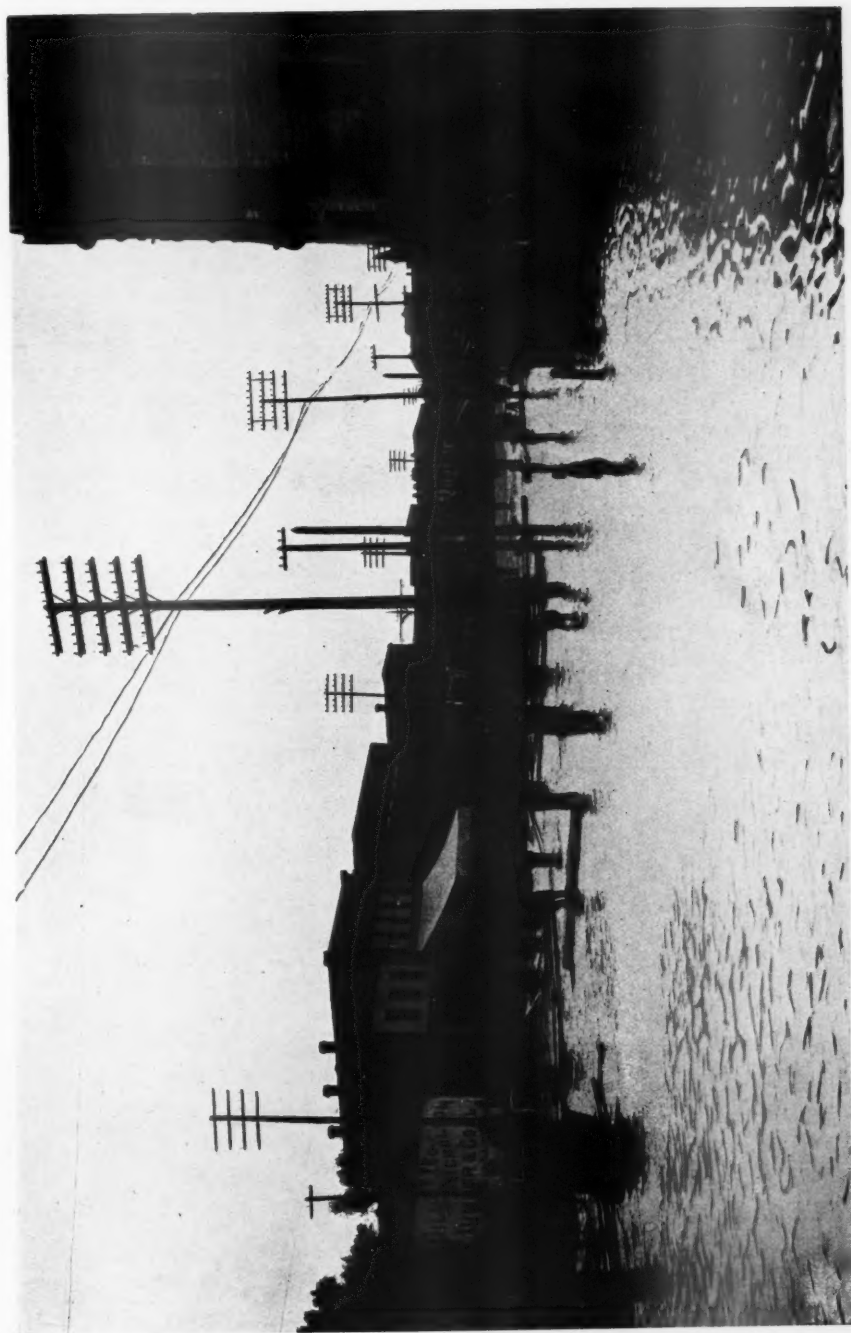
For the counties and state it would be a far wiser business policy to collect a low, permanent tax rather than a heavy one for a few years only.

The reserve of mineral in a mine bears no burden of taxation; no other growing crop than timber pays any tax until harvested.

The remedy for the destruction of forests by individuals is in the proper adjustment of taxes. Timber land should be taxed on the value of the land only; the growing trees should be on the basis of any other crop, and taxable as personal property when they are cut; or, in other words, when the crop is harvested. Under such a system the timber owner would be obliged and could afford to adopt a scientific and conservative management of the forest, and would be a willing demonstrator of forest preservation and its far-reaching, desirable results.



An Example of Wasteful and Destructive Lumbering in the Sierra Nevada



Topeta, Kans. Flood. Building Pontoon Bridge from Rock Island Depot

STATE FOREST POLICY

By HERMAN HAUPT CHAPMAN

Assistant Professor of Forestry, Yale University

As the virgin timber supplies in the different states near the point of exhaustion, the question of growing timber to meet the many urgent needs of our industries and arts is brought squarely before the public. The National Government has been able by timely legislation and the courageous action of several of our Presidents to retain title to an immense area of public timber lands lying west of the Mississippi River. But constitutional limitations will probably confine the operations of the Government to public lands, or to tracts situated at the headwaters of navigable waterways. In the Eastern states, especially, state governments have duties and responsibilities in forestry which can never be assumed successfully by the National Government.

The first of these duties is the encouragement of private forestry. No matter how much land the state may finally acquire, much the larger and more valuable portion of the timberlands capable of producing the most rapid growth of timber will remain the property of private owners as woodlots or of large land owners or corporations as cutover lands. Upon these lands, the production of new crops of timber must depend upon private effort.

But left to themselves, private owners will be slow to undertake forestry on a large scale. The extensive growing of timber can be carried on by individuals only as an investment which must give them a return on their money. Under present conditions the danger of destruction or severe damage to timber by forest fires is so great that such investments are not safe, and the com-

paratively long period which the investor has to wait, with his property exposed all the time to fires, before he can realize any returns will discourage many who otherwise would grow timber. A second, equally serious drawback is the heavy taxes which in many localities are assessed against standing timber and which threaten to absorb whatever profit might otherwise be made by the owner. It is clearly the duty of state governments to remove these two great obstacles to private forestry by passing and enforcing suitable laws.

Most states have already passed fire laws making it an offense to set fire to woodlands either purposely or accidentally. Such laws have always remained a dead letter until the office of fire warden was created for the proper enforcement of the law. The most primitive form of a fire warden system is that which imposes the duties of fire warden for a town upon the town supervisors. Experience has shown that such officials are indifferent to these added duties. The best results have been obtained in states which have created the office of state fire warden and made the local or town wardens appointive. The town board may retain the power of appointing a fire warden, or he may be appointed by the state warden, who should in any case approve the appointments and have the power to remove an inefficient warden. By this plan a warden may be secured who is willing to devote the proper time to his duties and who can be retained in office by reappointment as long as he is willing to serve. With an active and efficient state fire warden



Large Poplar Tree Growing in Mountain Ravine on West Slope of Great Smoky Mountain,
Eastern Tennessee



Result of Fire Protection Commenced in 1890, and Seed Felling Made in 1894. Five to Ten Pine Seed Trees Are Left on Each Acre

to supervise the work of the town wardens, instruct them in their duties and weed out incompetent wardens a sound basis is laid for fire protection of woodlands.

But no force of fire wardens, however good, can prevent fires if neither the owners of forest lands nor the residents of the locality desire protection. If fires are constantly being set, and the wardens' duty is merely to extinguish them, the expense would be prohibitive. Prevention of fire is the cheapest method, and this can be accomplished by education of the public to the damage done by small as well as large fires, by punishment of offenders, and, when possible, by providing for patrol during the dry times by the wardens or deputies.

Large owners can supplement the work of town wardens by using their employees as a fire patrol, and state

laws should provide for the appointment of such persons as fire wardens.

The progress already made in some states under proper laws is such as to encourage the belief that complete fire protection may, in time, be secured wherever an honest effort is made along the right lines.

In the matter of tax reform for the encouragement of private forestry, little progress has been made. Many laws have been passed providing for some form of bounty, rebate or exemption on plantations of timber trees. Some have been declared unconstitutional, while others have not been taken advantage of. A more general reform is needed. As long as timber is looked upon as real estate it will be overtaxed. Virgin timber which has cost the owner no effort to produce it may with some reason be assessed on the basis of realty, but where woods are grown as



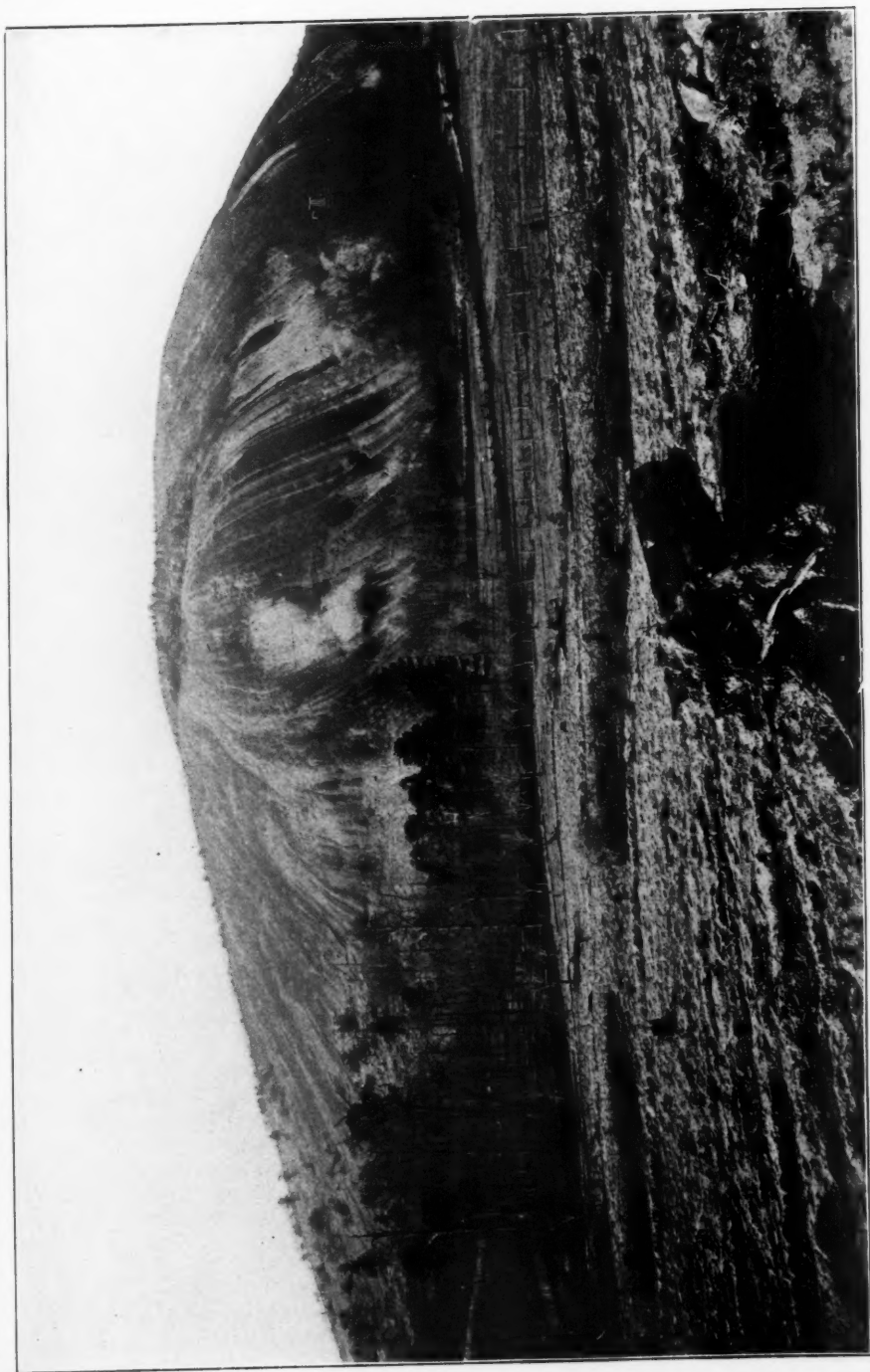
Forest Land in Minnesota Devastated by Fire. This View Will Explain to Some Extent the Diminution in the Cut of White Pine

a result of definite outlay of time or money, they are in all respects a crop, and represent income on the land. The effect of the present system of taxation is to force the owners of valuable timber to cut it to escape extortionate taxes and to discourage the growing of new crops of timber trees. It is not possible to cut and market timber until it reaches certain sizes, and the longer it is allowed to grow, the more valuable the product becomes to the community.

Standing timber should be released from taxation wherever it can be shown that the property is being managed for the continuous production of wood crops. The best method of accomplishing this is to limit the assessed valuation of such lands to the value of similar wild or unimproved lands not timbered, and provide that the lands shall be managed under plans approved by the state forestry officials. Should this discrimination in favor of forest lands cause too great a loss of revenue, a tax should be laid on the timber when it is cut rather than to revert to taxation of standing timber. Tax reform

for woodlands may be expected soonest in states whose supply of virgin timber is nearest to exhaustion.

The forest policy of any state would be incomplete if confined to such general legislation to encourage private forestry. There is much to be learned in this country regarding methods of handling woods to get the best growth of most valuable timber. Mistakes are costly, for they do not become fully apparent for many years. The state should provide against such mistakes and waste effort on the part of its citizens, first, by employing a forester with a thorough professional education and considerable experience to give information to those in need of it; and second, by acquiring land as forest reserves for the purpose of experimenting and demonstrating the best methods of forest management. Such a policy is illustrated by the work of the agricultural experiment stations. There is no state so small or with so little waste land that it would not be justified in establishing small forest reserves for educational purposes.



Stone Mountain, near Atlanta, Ga. The Ax and Fire Have Removed the Forest; and the Heavy Rains Have Removed the Soil Which Once Covered the Larger Part of This Rocky Knob

But most states cannot stop here. In nearly every large state there are bodies of land not suitable for agriculture which, for many reasons, the state should own and manage as forest reserves.

The best use to which land can be put is the production of farm crops. But lands too mountainous or rocky to be cultivated will grow valuable crops of timber, and if used for this purpose, contribute to the resources of the state. Only when every acre of productive land is put to its best use, is the highest prosperity attained.

But aside from producing crops of wood for use, the growing of timber on mountainous land is desirable for two other purposes. The first of these is the preservation of the soil on steep slopes by preventing erosion, and the consequent regulation in the flow of streams and reduction of danger from floods. This is one of the most striking and most easily demonstrated effects of forests, and in certain mountain regions is the chief argument for forest preservation.

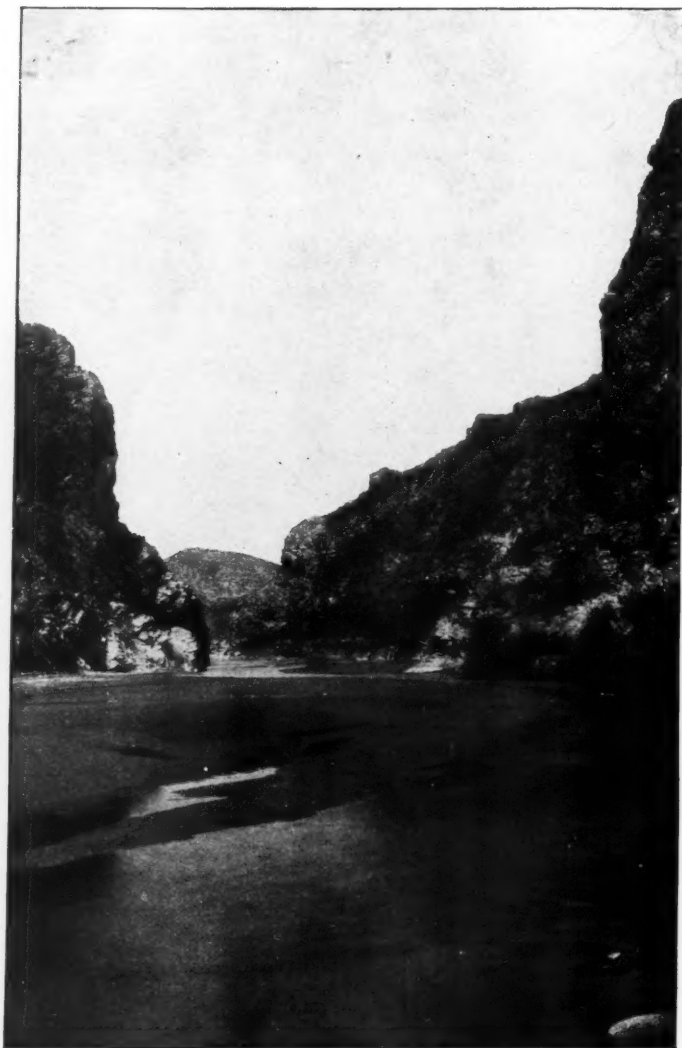
The second motive for devoting mountain lands to timber growth is to furnish parks and pleasure grounds for the public. This last incentive is the simplest and most widely understood of the three, and will meet with the most ready support. But it has often been unduly emphasized. A state forest policy which is unable to harmonize these three essential objects of forest reserves, namely, timber production and use, protection of soil and water, and public parks, will remain a continual source of dissension in the state and is economically false. Timber should not be cut indiscriminately where the other two objects must be secured. But it is an inexcusable waste to prohibit cutting of timber upon large areas of forest land that they may be used exclusively as parks. The great majority of persons visiting such forests will travel along certain definite routes, either streams, trails or roads. The old timber can be left intact in all such places. For landscape effects from the

tops of mountains, young timber looks as well as older growth, and it is only necessary to keep out fire and protect the soil by the prevention of too heavy cuttings. Thus the management of large state holdings as parks is not opposed to their use for the production of crops of timber.

Where erosion is rapid and its effects on the flow of streams disastrous, state ownership of such lands and control of cutting is the only means to end the trouble, short of National intervention for the same purpose. Laws are sometimes proposed to prohibit timber owners from cutting trees below a certain size. Such legislation would only be justified in these mountainous localities, and under conditions where it could be clearly shown that destruction of property belonging to others would be caused by the removal of such timber. And such a method of attempted regulation of private property is far more drastic and difficult to enforce than a policy of acquiring such lands for the state. Public ownership makes possible any form of management best suited to the general good.

So great has been the pressure for state ownership of such mountainous areas that in the states of New York and Pennsylvania a total of considerably over 2,000,000 acres has been acquired, largely by purchase, for forest reserves.

But some states have a much more difficult problem to decide. There are many areas of level land which can easily be cultivated but have not been successfully farmed. The commonest type is a coarse, deep sand with no subsoil found in many pine regions. Much of this sandy land in older states has been taken up and abandoned several times. It is in dealing with soils of this character that our state policy needs strengthening. Conditions in America are still unsettled, and the pressure for land is very strong. The doctrine that lands too poor for agriculture should be used for the production of wood crops is not yet accepted, for no land which can be plowed



San Carlos Dam Site, Gila River, Arizona

will be relinquished to forest reserves without a struggle. In every state which has attempted to create forest reserves on sandy land a bitter fight has been waged against the withdrawal of such lands from agriculture.

This opposition springs naturally from both the settlers in such districts

and the speculators in farm lands. The interests of the settler are promoted by more rapid settlement, since a denser population not only reduces the taxes for roads and other improvements, but creates better markets for produce. A suggestion that a portion of any region is unfit for agriculture is



End of a Log Slide

a blow at the development of the district. This should be recognized, and extreme statements and radical measures avoided by forestry advocates.

But final judgment cannot be formed without considering the other side as represented by the land speculator. In many districts the test of experience has shown the difficulty of profitable farming, and the original settlers have abandoned the attempt. Land speculators find in these lands a fruitful source of profit, and induce inexperienced or over-confident investors to buy them for homes.

There seems to be but one way to meet this situation honestly, and that is by acquiring such lands for state forest reserves. We need these lands for growing timber. In such thickly settled countries as Prussia sandy lands are being purchased every year by the Government and planted to pine. We must learn in this country to put land to its best use, and be willing to admit that in some cases this best use is forest production. The ability to distinguish between agricultural and forest soils,

and the power to open the first class to settlers and prevent the improper use of the true forest soils for agriculture can only be developed in a state under a progressive policy of state forest reserves.

There are thus strong reasons for state ownership of forest lands in all instances in addition to the need of producing timber. Should the argument be based solely on the necessity for the state to grow timber, it might be held that a state must not compete with individuals in the production of crops. This is true where individuals can supply the demand for the product and where state competition would in any way hamper private effort. But in the production of timber, experience in this country as well as abroad is rapidly proving that the individual or corporation is seldom willing to invest the money or make the sacrifices necessary to secure a second crop of timber, while under state control the proper steps may be taken with little difficulty. It is certain that all the timber that can be raised by the united efforts of states



Every Forest-lined Breathing Place Is a Powerful Influence in the Uplifting of Future Citizens

and private parties will not supply the demand, hence it is equally certain that the growing of timber by the state will not injure the individual. It will aid such private efforts by improving conditions of public sentiment, securing better fire protection and developing markets for home grown timber. The larger and more valuable sizes of timber needed for special purposes, and the clear lumber which comes only from older trees can only be produced in the future by the state, since no other owner can afford to wait so long before cutting his crop.

A progressive forest policy for a state calls for absolute freedom from political connections, and for direction by men of proper training and knowledge of forestry. A policy of land acquisition may be managed successfully by men without a forester's training, and such public-spirited men have been responsible for nearly all the progress that has been made so far in securing state forest reserves. But as soon as the foundations are laid and

the work of management for the purpose of timber production begins, it should be in the hands of trained foresters.

The experience of some states has indicated the best method of securing an efficient and non-political management of forest reserves. A forestry board should have control of the policy of the state and should decide matters dealing with state lands and the expenditure of money. This board should be composed of men occupying positions of responsibility in the state, in educational or technical lines; and, when feasible, the commission should be named specifically; as, for instance, President of State University, Director of State Geological Survey, Professor of Forestry in some well-known institution. Five members should make a large enough board.

The executive officer of the board should be a state forester appointed by the board. By this arrangement, the forester is responsible to the board, whose members, in turn, will be able to

give the proper time to the work, since their other duties will be confined to meetings, held at stated intervals.

Unless forestry work in a state is organized along some such lines, the chances are that sooner or later the organization will prove inadequate, and the work stagnate and fall into disrepute, or even become the prey of politicians.

State forestry is in its infancy and

the need is urgent. Mistakes are costly and often unnecessary. A clear cut policy, persevered in, will succeed, while radical differences of opinion may mean wasted effort. An understanding of the true goal of state forestry is needed to direct and unite such efforts. A constant interest on the part of the public in the forestry work of the state is the surest guarantee of ultimate success.



Specimen of Arizona Pine in Santa Catalina Mountains; Altitude, 6,000 Feet



White Pine Forest in the Region of the Proposed Southern Appalachian Forest Reserve, Showing Reproduction on Cut-over Lands, Graham County, North Carolina

THEODORE ROOSEVELT

Dynamic Geographer*

By FRANK BUFFINGTON VROOMAN, F. R. G. S.

INTRODUCTORY

NO INTELLIGENT geographer or economist will be satisfied with mere catalogues or classifications of facts, that so many trees have been planted, so many dams have been built, so many canals have been digged, or that so many cornfields have allowed so much bacon to be added to the world's common store of good. It is imperative that we connect a continental rearrangement with the fundamental principles underlying the progress made. In other words, the economic geography of the United States cannot be intelligently studied apart from the political geography of the United States.

In reviewing the Roosevelt administration, one is startled by the array of practical results achieved for the common good, and no less by the impetus and universality of the movement among the people toward the idea of a new democracy. There is a chance that American destiny may be fulfilled on rational instead of fortuitous lines. Mr. Roosevelt's work has been laid on geographical foundations, carried on in an ethical spirit, and conservatively within constitutional limits.

The future historian will date a new era in American history from him. American politics can never again be the arid waste it was before it was watered by Mr. Roosevelt's irrigation ditches. Facing problems no less than continental, he made a political issue of a national economy. Over and above the administration of the affairs of

nearly ninety millions of people whom he essayed to give a "square deal," were the great geographical problems to be solved for generations unborn. Here was unavoidable confusion and waste. Here was possible unlimited power and use. Here was a great people bereft of certain utilities in raw materials and natural resources, some of which were going to natural waste, and some of which, with criminal recklessness, were being stripped and appropriated by the land-skinner. In the scientific divisions of the departments of government were thousands of experts and scientific men collecting information more or less valuable, but haphazard, concerning land and water and forest supplies, but nowhere appeared the universal mind to synthesize and utilize all for one constructive national purpose.

The first American President who was practical statesman, ethical philosopher, and scientific geographer, elected to office at the close of a period (which he closed) of arid mediocrity, when few public men were aware of an issue other than the tariff or graft—this man has blazed new trails for American destiny. This is a great work to have achieved—to have cut a hemisphere in two and joined two oceans into one; to have begun the habilitation of what Mr. Walter Page would call an "unkempt continent;" to have laid scientific foundations for quintupling the commercial and economic capacity of the million and a half square miles of the fertilest land on earth, lying in the basin of the Missis-

*Based on a lecture delivered to the School of Geography, Oxford University, March 8, 1909, and published by Henry Frowde, Oxford University Press, London.

issippi and the Great Lakes; to have snatched an area the size of New York State from the sage brush and rattlesnake, and an area four times as large from the land-skinner, and presented them to the American people without the eventual cost of a brass farthing; to have widened the sphere of the State, changed the definition of the word "politics," laid democracy on ethical foundations, and made it possible to speak of politics and ethics in the same breath without an apology. This, I say, was a great work, and but a part of the actual achievement during three-quarters of the first decade of the new century, due to the intelligence and initiative and determination of one man.

Mr. Roosevelt was able to accomplish this work because he knew it was the kind of thing which would never get done of itself; because he applied the scientific knowledge and political resources of the Nation to the task; because he had intelligence enough to know that progress is rational and not fortuitous. Here was one political geographer who happened to have the political resources of a nation behind him, and what is more to the point, who happened to have the intelligence to synthesize those resources and organize them into a national program and purpose. In these acts he expressed a faith in the people more potent than that of any exponent of individualism from Jefferson to Bryan. Here is a pledge of faith in national self-government. Here is a scientific outline for constructive and ethical democracy on the basis that the whole people can govern, and does govern, itself. He has done more than any other American to bring the public to self-consciousness, and perhaps to self-sufficiency.

No man in the Western Hemisphere ever dealt so deadly a blow to a political fetish as when Mr. Roosevelt laid his big stick on the doctrine of *laissez-faire*.

It is a very interesting fact that almost every great policy Mr. Roosevelt has ever advocated has had both an ethical and a geographical-economic character. The combina-

tion gave it also a political character. I say geographical because these policies were intimately connected with the national resources of the earth, either in their production or transportation; and ethical because he constantly refused to consider them except with reference to the common good. It will be seen, when his account is made up, that Mr. Roosevelt is one of the few "applied geographers," to use a phrase Doctor Keltie has made his own, who has taken geography seriously, scientifically and politically, and has put the resources of a great nation behind it to further the interests of mankind.

He was the first President who dared to attempt the solution of the vital geographical problems presented by the territory occupied by the United States in their largest and completest bearings by the wisest and most conservative political methods. He saw that these problems would never solve themselves. The gospel of individualism carried no message of salvation. And if any voice came crying from the wilderness, it was that the problems of the wilderness must be solved by a national policy grounded on the certainties of scientific foundations, with no guesswork, no haphazard, no *laissez-faire*, but by a far-sighted and constructive statecraft.

There are long periods of American history in which successive presidential administrations have been fruitless, and in which the country has made no advances, except such as it was impossible for such a country to keep from making. Until now, the twentieth century, the man had not appeared capable of scientifically and intelligently investigating his data, and so able to state his problems, and then offering such wise solutions, as he has done, in so masterly a fashion, for those very problems which everybody else before him seemed to have overlooked.

It is, of course, hardly necessary to say here that I am keeping in mind other kinds and sets of problems which have been bravely met and wisely mastered in their day. But this does not keep me from saying also that the work

of President Roosevelt, which has made the vast continental domain a more fruitful habitat for a happier people, now and hereafter, has already become one of the most fascinating achievements of modern times.

Theodore Roosevelt is a new kind of geographer. There are static geographers and dynamic geographers. Mr. Roosevelt is a dynamic geographer. One studies and describes that geography which man helps to make; the other helps to make that geography which other men describe. They are necessary complements in the great scheme of geography, and they bear something like the relation to each other (if I may say it reverently) that the Bible bears to the encyclopedia. The dynamic geographer is the efficient geographer, the constructive geographer, the busy geographer; the man who gets geographical things done; the man who studies the land and water with an ethical purpose in the back of his mind, with reference to getting from them, for mankind, the highest possible amount of use. The dynamic geographer is the strenuous geographer, and this one has made himself a practical incarnation of the principle of making two blades of grass grow where one grew before, without letting any grow under his feet.

Just now he is to try a new geographical role. He is becoming an explorer in South Africa before he is to become your distinguished guest at this university, and, I hope, of this school of geography. It is also said that he is going lion-hunting. So far his special animosity has been the bear. He has hitherto shown no special grudge against the lion, especially of the British variety. But if he does not make some new and striking contributions to geographical dynamics in Africa before he returns this way, those who know him will miss their guess.

SITUATION

The first decade of the twentieth century, or, roughly speaking, the administration of President Roosevelt, found the economic situation in the United

States a most extraordinary and interesting one. This situation discloses some of the problems which his administration has had to face boldly, and for which it had to offer solutions. Perhaps one of the first things that strikes the observer, if he gets far enough away to take a bird's-eye view, is the chaos both in the economic and political conditions of the entire country; the anarchy which prevailed among certain people and over certain areas; the mad and unintelligent scramble to get possession of the raw materials and natural resources of the Nation; the prodigious waste which attended the scramble for these resources, and their concentration and final centralization and congestion in a few pairs of hands; finally culminating in the stock gamblers' panic of last year, whose evil effects have been felt by every man in the civilized world.

This panic was brought on by the stock-gambling régime in the midst of a material prosperity unknown in the history of the world, in a year when the production of American farms was greater than the entire national wealth fifty-eight years before. It occurred at the close of a generation in which the material increase of wealth measured in tons of gold coin more than all Great Britain had laid up for 500 years; at a time when the United States owned one-fourth of the world's wealth and put out one-third of all the world's manufactured product.

A very interesting statement was made a few months before the advent of this panic by James J. Hill, the railway promoter. (I might as well say that there is a vast difference between the railway promoter and the railway smasher.) Mr. Hill made the statement (1906) after an era of railroad building, which in twenty years had built enough railroad in the United States to reach three times round the globe and leave a branch line from here to Vladivostock, that there was neither money enough nor rails enough in the world to build track enough to carry the traffic offered.

The first decade of this century, however, found 100 men controlling the

bulk of all this wealth, and nearly 90,000,000 people controlling the rest. It has been stated that one per cent of the population actually owns or controls ninety per cent of all this wealth, and the 100 men known, for want of a better name (or worse), as Wall Street, who control the larger part of these vast assets, constitute from one eight-thousandth to one nine-thousandth part of one per cent of the population of the United States. This is why they are able to produce a world panic, felt to the uttermost reaches of civilization, in the midst of an unparalleled and unexampled prosperity.

This first decade, also, among this coterie of dollar-getters, found one man (and we are by no means certain that he was the richest man in the country) whose annual income is greater than the combined wealth, in total capital, of every millionaire in the United States before the Civil War.

This is the economic paradox presented by the first decade of the twentieth century.

A few people began to ask some questions as to why there was no money in circulation during this unexampled prosperity; why in the midst of it it was possible for a stock gamblers' panic to be perpetrated; why nobody for months could borrow money on any security whatever to conduct legitimate business; and why men could not draw their own money out of the banks in larger sums than £10 at a time.

The New York financiers chose an inconvenient time for the panic. In forcing this panic the stock-gamblers made their first fatal blunder. They got the American people to wondering whether, after all, their prosperity were not a good deal like that of the fly described by Josh Billings, which had acquired a half-barrel of molasses. A few of the more disinterested and farsighted saw in this stock-gamblers' régime an immediate and overshadowing menace to the very existence of the American Republic. This menace is financialism. It is not commercialism, not even the materialism which constitutes, unfortunately, the basis of the

American idea of life. It is an insolent and irresponsible gambling and wrecking game, beside which the Louisiana lottery was a Sunday-school—a game run by creatures whose only distinction, and apparently whose only aim lies in the heaping up of what others need, and they cannot use—a game destitute of soul or spirit, unless it were the spirit of Demylos at the Greek banquet, who, wishing all the fish for himself, spat in the dish.

When, by a series of revelations in the business world, or, more accurately speaking, in the financial world, it became evident, through these revelations appearing in instalments, with appalling punctuality, that these vast and grewsome hoards had been heaped up by methods which could not compare favorably with those of the late Captain Kidd (inasmuch as he was willing to take some chances, and invested himself with certain shreds of romance) the American people began to sit up and rub their eyes. It began to be apparent to them that American institutions were being developed rapidly, and almost solely, for the benefit of the financial classes. Those without the financial instinct, however able in other walks or realms of life, suddenly found themselves in danger of slavery or extinction. One eight-thousandth of one per cent now ruled this blessed democracy. Life on the financial or acquisitive plane, under individualism, means that the strong win and the weak perish. This, being interpreted, means that the financial strong win and the financial weak perish, and the inevitable issue is a financial despotism. Free competition had broken its backbone carrying its own fat, and had crawled into the sarcophagus of billionaireism to die and rot. That which De Tocqueville had feared had come to pass in America—democracy had issued in despotism. The dream of the Jeffersonians and the eighteenth-century revolutionists had not been fulfilled. The *laissez-faire* millenium had not arrived. We found we had been developing the wrong kind of democracy—the democracy of individualism. For

individualism means unlimited and uncontrolled competition and the apotheosis of the selfish instinct. It makes no allowances for the principle of handicap. Uncontrolled competition means the fattening of the big upon the little. It is the law of the fish-pond, the dog-kennel and the wolf's den. Free competition in its larger sense issues in the supremacy of the strong and the cunning. The supremacy of the strong issues in the aggrandizement of the strong at the expense of the weak, until there is no more competition or possibility of competition. If a dozen wolves are put in a fold with a hundred sheep, on the principle of free competition, there is only one question involved, and that is *how long* before the wolves are to acquire all the mutton.

Mr. Roosevelt decided that the time had come to put a stop to the stock-gamblers' régime. He knew that if he did not do it, the American people would do it in another way. If it were to be done conservatively, it must be done at once. It was for this reason that he stepped out into the arena to do battle, with the spirit of the old gladiators upon him. Indeed, he is not at his worst in this role, this man of peace! He demanded a "square deal" for the people. He demanded the organization, conservation and use of the national resources. He demanded constitutional solidarity in place of the whimsical rule of state rights and *laissez-faire*. He demanded a sovereign for the areas of anarchy between the states, a scourge for the cave-dwellers of lawless wealth and impecunious envy alike, prison bars for the unlawful exploiters of unrequited toil and unprotected property, Nemesis for the insolent throttlers of competition, gyves for the pirates on the high seas of finance.

Mr. Roosevelt holds that political responsibilities are immanent; that political relations, as they are objectively expressed in a rational state, are the fulfillment of certain capacities in man, without which he would not be man at all, and that such capacities are ethical. To him politics reveal a body of duties as well as rights, which themselves im-

ply a common life and a common good.

Every measure he has ever proposed, and lost or won, has had its distinctive ethical value. Every law he has enforced and every act he has carried through Congress, every measure which through his initiative and support has been written on the statute books of state and Nation, without a single exception, has been in restriction of the field of anarchy in the interest of law and order and equity, and toward the enlargement of the ethical sphere of the State—toward the centralization and rationalization and moralization of its power.

ETHICAL SPIRIT

Mr. Roosevelt's contribution is not only that he has given the Nation a new rational and scientific idea, but he has awakened a new ethical spirit. The Hon. William Rodenburg said in Congress, last April: "If Theodore Roosevelt had accomplished nothing more than the awakening of the public conscience to a realization of the dangers of corporate encroachment, he would still lead all the men of his day and generation in the great work of practical and permanent reform." The American people are no worse than others, and I will not say that they are very much superior, but for some reason or other, until recently, the word "politics" in America always carried with it a reproach. For three-quarters of a century, since the Jacksonian Democracy crystallized into practise, the slogan was, "To the victor belong the spoils." The very mention of American politics had been but a signal, from sheer force of habit, for one hand to fly to one's pocket and the other to one's olfactories, in instinctive self-defense. In the proper sense, we may hardly be said to have had a politics at all. We had a kind of political scrap-book; we had policies; we had a political economy (imported and antiquated); but we have had no political philosophy. Consequently we have had no political ethics. We have developed in many respects political morals, but for a long time we hid these under a bushel,

and could have gotten them under a peck. But no one has yet formulated the theory of our institutions, nor had they, before the beginning of this century, worked out a theory or practise of political ethics. But a revolution has been accomplished by the incomparable work of the United States Civil Service Commission, of which Theodore Roosevelt was one of the earliest and most effective commissioners.

This is what Mr. Roosevelt has laid foundations for doing. His ethical contributions are much more far-reaching and important than his restrictions on unlawful financial power. He has worked out a new constructive ethical idea on scientific foundations. He has realized that idea, not only in stemming the tide of individualism rampant, but he has shown the path which will avoid the evils of socialism. He has been the first man in position of peculiar power or influence since Hamilton to see clearly and draw distinctly the natural line of cleavage which separates the two great principles in natural antagonism in America. He has precipitated the political issue of the twentieth century, not merely in the United States, *but the world issue of the twentieth century*, that between the democracy of individualism, which threatens the very existence of democracy upon the earth, and

the democracy of nationalism, which offers the only rational and ethical alternative for socialism or individualism.

"The chief aim of De Tocqueville," says Professor Flint, "was to demonstrate that democracy was in imminent peril of issuing in despotism." Farther on, he says: "There is nowhere visible on earth to-day any power capable of resisting or crushing democracy. If there be none such, it does not follow that it will not be arrested in its progress, but it follows that it will only be arrested by itself."

The distinguishing characteristic of Mr. Roosevelt's statesmanship is that, if he has marked the outlines for the future of the only kind of democracy in which politics and ethics can ever coincide, he has saved democracy from itself.

Therefore, I say distinctly, knowing that the judgment of history will back me up, and that the magazines and publishing houses owned in Wall Street will not, that Theodore Roosevelt is one of the few universal political geniuses of the world, and that a new era in world politics and a new day for rational, ethical and constructive democracy dawned upon the world the day Theodore Roosevelt was sworn in as President of the United States.

(To be continued)



Ball's Head Reservoir, Colorado River, California and Arizona

The Equalizing Influence of Forests on the Flow of Streams and Their Value as a Means of Improving Navigation*

By GEORGE F. SWAIN, LL.D., Professor of Civil Engineering
in the Massachusetts Institute of Technology

IT IS the opinion of probably the great majority of engineers conversant with the subject, that forests act as equalizers of the flow of streams by diminishing, in general, the frequency and violence of freshets, and increasing the low-water flow, and by preventing the erosion of the soil and the consequent silting up of water-courses.

Based on these premises, it is believed to be of much importance to the interests of navigation, as well as to other interests, that the United States Government should establish forest reserves in the Southern Appalachian and White Mountains, the object of such reserves being:

First, to aid in the protection of certain given watersheds.

Second, to enable the Government to give an object-lesson to private owners in the vicinity as to what may be accomplished by proper forest management, and to cooperate directly with such private owners in encouraging them to use the best methods.

Third, to aid in preventing forest fires and the consequent deterioration of the soil and destruction of timber on both Government and private lands.

Fourth, to aid in and encourage reforestation, and, by this means, and by proper management, to augment and prolong the timber supply.

In September, 1908, a paper, the title of which has been quoted below, was published in the Proceedings of the American Society of Civil Engineers, by Col. H. M. Chittenden, of the Corps of Engineers, U. S. A., in which arguments were advanced which in a measure seem to controvert the generally accepted opinions. The present paper is a brief rejoinder to that article, prepared with special reference to its bearing upon the Appalachian and White Mountain forest-reserve bill.

The paper of Colonel Chittenden is exceedingly well written and upon first reading might seem to contain strong arguments against the regulative action of forests. Upon analyzing its statements, however, it will be perceived that Colonel Chittenden practically acknowledges most of the claims made for forests, that the paper contains many contradictory assertions and illogical deductions, and that his arguments are largely conjectural and unaccompanied by proof.

The paper states that the commonly accepted opinion is that forests have a beneficial influence on stream flow:

"(1) By storing the waters from rain and melting snow in the bed of humus that develops under forest cover, * * * preventing their rapid rush to the streams and paying them out gradually

*Being mainly a rejoinder to the paper of Col. H. M. Chittenden, U. S. A., entitled "Forests and Reservoirs in Their Relation to Stream Flow, With Particular Reference to Navigable Rivers," presented before the American Society of Civil Engineers.

Prepared at the request of His Excellency Curtis Guild, Jr., Governor of the State of Massachusetts.

afterward, thus acting as true reservoirs in equalizing the run-off.

"(2) By retarding the snow-melting in the spring and prolonging the run-off from that source.

"(3) By increasing precipitation.

"(4) By preventing erosion of the soil on steep slopes and thereby protecting water-courses, canals, reservoirs and similar works from accumulations of silt."

This will probably be admitted to be a fair statement of what the believers in the benefits of forests consider to be true, except that some do not consider that there is yet sufficient demonstration that they increase the rainfall, and also except that the water is not stored simply in the bed of humus, but also in the ground beneath.

With reference to the first of these points, the author states that it is "strictly true of average conditions." He says: "It is true, therefore, as popularly understood, that, in periods of ordinary rainfall, with sufficient intervals for the forest bed to dry out somewhat, forests do exert a regulative effect upon run-off. They modify freshets and torrents and prolong the run-off after storms have passed, and therefore realize in more or less perfection the commonly accepted theory." He believes, however, that this beneficial effect is not exerted under extreme conditions, *i. e.*, great floods and excessive low waters, and he states that these extreme conditions "determine the character and cost of river control."

Even if it be admitted that the presence of forests does not affect "extreme conditions," this is no argument against the value of forests, for it is certainly not true that only extreme conditions affect the navigability of streams or "determine the character and cost of river control." Extreme conditions determine certain elements, such, for instance, as the height of levees. Colonel Chittenden certainly cannot mean to state that ordinary, every-day floods do not carve away banks and cause shoaling of channels, rendering dredging necessary for navigation. A few high but not extreme floods may do much

more damage than one extreme flood, and may necessitate more expenditure for dredging and other purposes. Extreme conditions are in the nature of freaks. They occur only at intervals of many years. It would seem to be more nearly correct to state that the interests of navigation are governed more by the usual conditions, and that it is possible for extreme conditions at rare intervals to interrupt traffic for a short time without causing much loss. It may as well be argued that it is not wise to attempt improvements on railroads because an earthquake or a tornado or an extreme flood in a river may destroy a portion of the track and interrupt traffic for a while. It matters little in the navigability of a stream if at intervals of twenty, thirty, or fifty years an extreme drought occurs for a few days or weeks, making the depth of the channel insufficient for the largest vessels.

If it be true, therefore, that extreme conditions do not govern the question, Colonel Chittenden has admitted all that the advocates of forests desire. Let us consider, however, the arguments with reference to such extreme conditions:

The argument with reference to extreme floods appears to be that floods are always the result of combinations from various tributaries, the highest flood from one stream coming at the same time as the highest flood from other streams, occurring after periods of long-continued and widespread precipitation. In such cases the forest bed becomes completely saturated, the storage capacity exhausted, and when this point is reached "the forest has no more power to restrain floods than the open country itself."

It is, of course, evident that the rainfall may be so great and long continued that the forest bed becomes saturated and that the water flows over the surface, but it does not seem correct to say that in this case the forest has no more power to restrain floods than the open country itself. The discharge will be hindered in the forest by the physical conditions, and because the soil will not

be washed away and the water will not be gathered into torrents flowing down through eroded channels. Moreover, it seems a strange argument to maintain that because the retentive power of the forest is not unlimited it is not therefore useful. Even if it be admitted, however, that under a torrential rainfall the water flows away from the forest without hindrance, it is under just such a condition that the forest is most valuable in *preventing erosion*, for the water is distributed over the forest floor and does not carry with it the earth beneath. With reference to this point, however, Colonel Chittenden maintains that there is no more erosion from cut-over lands than from forested lands. There are certain reasons for believing that he is not correct. In the first place, the forest cover is always more or less disturbed or injured by the cutting, and after cutting is done it is more exposed to the sun and becomes dryer in summer and more liable to take fire. It is believed to be a fact that fire very frequently follows the lumberman and originates on cut-over land. This still further destroys the forest cover, and heavy rain falling on deforested ground is not broken in its fall by the leaves and branches of the trees. In many places, of course, a new growth springs up after the forest is cut, if it is not prevented by fire, and this new growth will in the course of time become a new forest, and the old conditions will be restored, but in the meantime there is a deterioration of the soil covering, and a greater liability to erosion, as well as a smaller power of retention, and consequently more rapid discharge of the rain waters. In some parts of the White Mountains, tracts once cut clean and burned over do not grow up again.

Colonel Chittenden suggests that under extreme flood conditions such as have been referred to, the presence of a forest may actually produce a worse condition than if the country were cleared, and asserts positively, but without proof, "that the forest does promote tributary combinations * * * and that it may therefore aggravate flood condi-

tions." He continues "that forests never diminish great floods, and they probably do increase them somewhat." As this statement is not proved, it can only be regarded as Colonel Chittenden's personal opinion. There is certainly no more reason for believing that forests promote the combination of floods from different tributaries than that they have the opposite effect. It may be admitted, however, that it is possible to conceive of circumstances in which, under extreme conditions, the presence of a particular forest may increase a particular flood at a particular point. It is equally possible to imagine many more conditions under which the reverse would be true, and it is clear that if the forest has a restraining influence on the discharge of water from the surface, increasing the amount of percolation into the ground, to reach the surface later at lower levels by springs and seepage, it must in the vast majority of cases reduce the frequency and violence of floods.

It is true, as stated by Colonel Chittenden, that the records of high water in most streams do not show that the waters now rise under extreme conditions higher than extreme floods which have occurred in the past. The highest recorded flood on the Connecticut River occurred in 1854, long before the present rapid rate of cutting on its upper headwaters had begun. Similar facts are no doubt true of other streams. Exceptional conditions are always likely to occur, but, as mentioned above, it is not exceptional conditions which should govern in this question. To represent them as doing so is like arguing against the benefit of food for the reason that a man's food may choke him, or against the benefits of the sun's heat, for the reason that people occasionally get sun-struck.

Colonel Chittenden illustrates the action of a forest by considering an inclined plane surface "practically impervious to water" with a layer of sand covering some small portion of it, and to which a spray of water is applied. This comparison, however, is not a correct one, for the forest cover does

not rest upon an impervious surface. The forest and its cover prevent the earth beneath from being baked by the sun and compacted by the rain. It is kept in a porous condition ready to absorb water which filters down to it through the forest cover. Any conclusion, therefore, drawn from Colonel Chittenden's simile must be inaccurate.

The author's summary of this part of the discussion is perhaps contained in the following sentence: "That the forest does promote tributary combinations, there would seem to be no question, and that it may therefore aggravate flood conditions necessarily follows. It is not contended that this increase is ever very great, but it is contended *that forests never diminish great floods and that they probably do increase them somewhat.*"

It would seem to be much nearer the truth to say that forests generally diminish floods, although it is conceivable that a forest may slightly increase a given flood at some points.

The author further states that "the forests are virtually automatic reservoirs, not subject to intelligent control, and act just as the system of reservoirs once proposed by the French government for the control of the floods of the River Rhone would have acted if built. These reservoirs were to have open outlets, not capable of being closed, which were intended to restrain only a portion of the flow. A careful study of their operation in certain recorded floods showed that they would actually have produced conditions more dangerous than would have occurred without them."

The last sentence of this quotation is rather conjectural and its meaning is not quite clear, but it will be surprising to most people to be told that a reservoir not subject to intelligent control does not regulate, and they will hardly accept the statement. Of course, a lake is a more efficient regulator than a forest, because, if its level is rising, the discharge from its lower end is always less than the flow into its upper end, while in case of the forest, when its storage is exceeded, its level cannot rise,

and it can simply hinder the discharge of later rain-water by physically obstructing its flow.

The general aspect of this part of the subject seems, after all, quite simple. The forest floor absorbs a large amount of water, prevents it from flowing off rapidly, and allows it to gradually percolate into the porous ground beneath. If the land were clear of vegetation, or if it were cultivated, and especially if the slopes were steep, the erosion would be greater, and might sooner or later leave no soil upon the rocks to serve as a reservoir in future storms. The author's argument, therefore, leaves unassailed the beneficial effects of forests in regulating flow.

The fact must be emphasized that those who believe in the beneficial effect of forests upon flow do not urge the preservation of the forests on lands needed for agriculture. The beneficial effects of the forests on flat lands in modifying the violence of freshets and increasing the low-water flow is much less clear than in the case of forests in steep mountain regions. It is the preservation of these last—forests upon land not suited to agriculture—that is believed to be especially important from every point of view.

The statement of Colonel Chittenden that the flood of 1908 in the Western States would have been much greater if the region had been forested, is a mere statement of his own opinion, entirely without proof, and undoubtedly incapable of proof; and, further, if the gauge records given by him show that it is impossible to find evidence in them to support the current theory of forest influence, it may also be stated that there is nothing in them to support his own contention.

The question will, of course, have occurred to the reader of these remarks: Why it is not possible by long-continued observations of the height of floods on our rivers to settle this question absolutely? With reference to this some explanation is necessary. The flow of a stream is the resultant of a number of elements, chief among which are rainfall, its distribution throughout

the year and over the area considered, the slope of the ground, the area of forest, cultivated land, etc.; the number of lakes and reservoirs, the temperature, and other elements. The chief of all of these is undoubtedly the rainfall and its distribution. A great fall of rain, long continued, will probably cause a great flood whether there are forests or not, although, as before explained, there is abundant evidence for the contention that the action of the forest is to diminish the flood. Meteorological phenomena are admittedly variable and uncertain, and, of course, they are entirely incapable of control. The rainfall varies from year to year in long cycles, the extent of the variation being such that in the United States it has generally proved impossible to determine with certainty whether the rainfall over a given territory which has remained in essentially the same physical condition is increasing or not. The rainfall at a given place may vary from thirty inches in one year to fifty or sixty inches in the following year, and its distribution is subject to similar variations. These variable elements, therefore, may mask the influence of forests or of reservoirs, but the important point is that these two *are the only elements subject to man's control*. It is admittedly physically possible, by reforestation and by the construction of storage reservoirs, to make the flow of a given stream practically uniform throughout the year, although to do so would in most cases involve a prohibitive cost; and, moreover, it would be physically impossible to regulate a reservoir and allow the water to flow out of it in such a way as to produce this effect, because the future cannot be foreseen. Observations of gauge readings on rivers, therefore, are inconclusive in themselves. Fortunately, however, we are not without valuable evidence on this point. Mr. M. O. Leighton, Chief Hydrographer of the United States Geological Survey, has, during the past summer, made an elaborate study of the floods of the Tennes-

see River, in which he has endeavored to eliminate the effect of the rainfall and its distribution by comparing the number of days of flood with the number of individual rainstorms of sufficient magnitude to produce floods. The record shows that during the last half of the period studied the number of days of flood was actually less than in the earlier part of the period, notwithstanding the deforestation which has recently taken place. The rainfall, however, has also been less in the latter period, and the results of Mr. Leighton's study are that the diminution of the rainfall has been much more than sufficient to account for the diminution of the floods, so that the *actual result is that the floods have been increasing, the percentage of increase being 18.75 in the last seventeen years, as compared with the seventeen years previous*. This study is the best contribution to the subject which has come to the writer's knowledge, and it seems conclusive. The experience in France also furnishes valuable evidence in this matter. In 1857, M. F. Valles, a French government engineer, published a work in which, and in some subsequent papers, he gave almost the identical arguments advanced by Colonel Chittenden, maintaining that forests diminished the rainfall, increased the floods, and diminished the supply of grain by withdrawing lands from cultivation. He also maintained that floods were beneficial, by bringing silt from the mountain sides to the plains. His work, however, seems to have been entirely without influence, for immediately after its publication the French government entered upon a policy of forest protection and reforestation, particularly in the mountain regions, which has been continued up to the present time. Up to January 1, 1900, the state had acquired over 400,000 acres, or 629 square miles, for the purpose of controlling torrents. Of this area, 440 square miles are in the Alps, 145 square miles in the central plateau and the Cevennes, and forty-

four square miles in the Pyrenees. The expenditure has been as follows:

For acquisition of land....	\$5,200,000
For work of reforesting....	4,000,000
For work of regulating....	2,600,000
Miscellaneous	1,600,000
Total.....	13,400,000

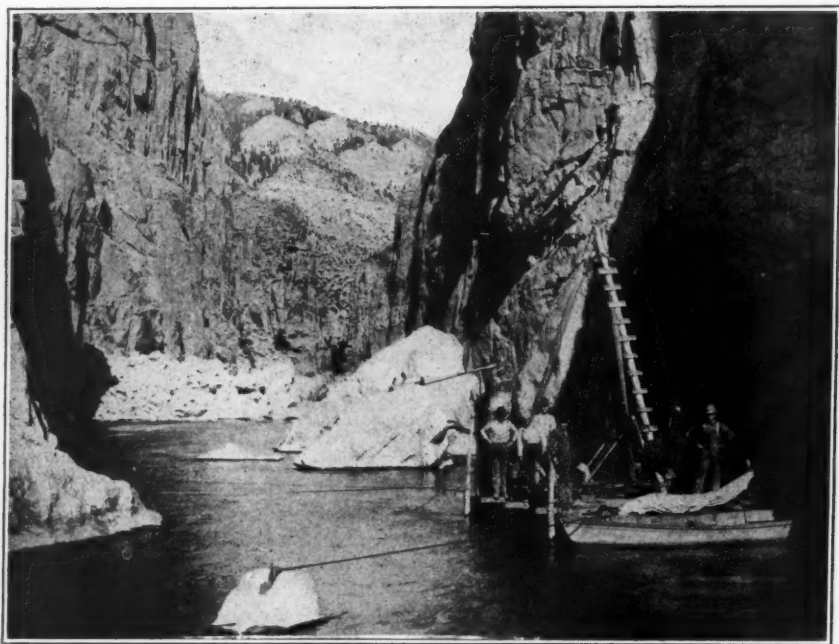
And there is still to be expended under the plan contemplated about \$23,000,000 more.

Referring to this work, one of the most recent writers on the subject (G. Huffel, *Economie Forestiere*, 1904) states: "The role of the forest as a regulator of the flow of streams may be considered as evident, and it is today universally admitted." Under the able direction of Prosper Demontzey, chief of the service of reforestation in

France from 1882 until retired in 1893, and of his predecessors, much has been accomplished, and some formerly very destructive torrents have been reduced to inoffensive streams, by reforestation and regulation, as above shown. Perhaps it will now be argued that the good results that have followed have been due entirely to the regulation, and not to the reforestation, but that is not the view of the French engineers.

At first, there was great opposition to the French governmental policy, on the part of the inhabitants of the mountain districts, and in 1864 there were riots in some places. This opposition, however, has entirely subsided, the inhabitants now cooperate heartily with the government, even petitioning to have it extend its work, and in some cases even giving portions of their lands on the mountain sides without compensation.

(To be concluded)



Diamond Drill on Barge in Shoshone River at Dam Site, Shoshone Project, Wyoming

A CHAPTER OF CONSERVATION HISTORY

By THOMAS ELMER WILL

THERE are subjects upon which it is necessary to "write with a quiet pen;" one of these is the brief history of the conservation movement in the United States. The facts in this history should be before the readers of CONSERVATION; in stating them the writer prefers to confine himself, where possible, to records and official utterances.

Among the resolutions adopted by the White House Conference is the following:

We agree that further action is advisable to ascertain the present condition of our natural resources and to promote the conservation of the same; and to that end we recommend the appointment by each state of a commission on the conservation of natural resources, to cooperate with each other and with any similar commission of the Federal Government.—*Proceedings of the Conference of Governors*, page 194.

On June 8, 1908, the National Conservation Commission was created by President Roosevelt.

On December 8, 9, and 10, there met in Washington the Joint Conservation Conference composed of the governors of the various states, their advisers, members of the National Conservation Commission, representatives of state and national organization, and others.

Among the resolutions adopted by the Conference was the following:

We also especially urge on the Congress of the United States the high desirability of maintaining a national commission on the conservation of the resources of the country, empowered to cooperate with state commissions to the end that every sovereign commonwealth and every section of the country may attain the high degree of prosperity and the sureness of perpetuity naturally arising in the abundant resources and the vigor, intelligence, and patriotism of

our people.—CONSERVATION, February, 1909, page 97.

In his special message of January 22, 1909, to Congress, transmitting the report of the National Conservation Commission, President Roosevelt quotes the above resolution and says:

In this recommendation I most heartily concur, and I urge that an appropriation of at least \$50,000 be made to cover the expenses of the National Conservation Commission for necessary rent, assistance, and traveling expenses. This is a very small sum. I know of no other way in which the appropriation of so small a sum would result in so large a benefit to the whole Nation.

No action was taken by Congress toward placing the National Conservation Commission on a permanent basis, nor was a dollar of money appropriated for its work. Instead, however, there was attached to the Sundry Civil Bill, which became a law on March 4, 1909, the following amendment:

Section 9—That hereafter no part of the public moneys, or any appropriation heretofore or hereafter made by Congress, shall be used for the payment of compensation or expense of any commission, council, board or other similar body, or any members thereof, or for expenses in connection with any work or the results of any work or action of any commission, council, board or other similar body, unless the creation of the same shall be or shall have been authorized by law; nor shall there be employed by detail, hereafter or heretofore made, or otherwise personal services from any Executive Department or other Government establishment in connection with any such commission, council, board or other similar body.

This amendment is known as the "Tawney amendment." Of it the Joint Committee on Conservation says:

This amendment prohibits the National Conservation Commission from going on

with this work under the Government, although the commission itself continues in existence.—*Bulletin No. 4, National Conservation Commission*, page 1.

In discussing the work of President Roosevelt in promoting the conservation movement, Charles Richard Van Hise, President of the University of Wisconsin and member of the National Conservation Commission, says:

In amazing contrast with these great, statesmanlike acts of the President is the position of Congress. The House embodied a section in the Sundry Civil Bill, which prohibits the scientific corps of any of the departments at Washington from doing work for any commission, council or other similar body appointed by the President. Since, notwithstanding the strong favorable recommendation of President Roosevelt, Congress made no appropriation for the Conservation Commission, this clause of the Sundry Civil Bill, coupled with the refusal to furnish funds for the Commission, makes without avail, so far as lay in the power of Congress, the conservation movement. * * *

Under the system in vogue in Congress, by which it is difficult to fix responsibility, with the exception of one man, we cannot certainly designate the individuals who are most guilty of halting the conservation movement. This exception is Mr. Tawney, of Minnesota, who introduced the objectionable section, and advocated its adoption. We should hold him responsible to the people for doing all possible to render ineffective the conservation movement. All good citizens who know the facts should spread the truth abroad as widely as possible in order that he may receive the profound public condemnation which is his just due.—*World's Work*, June, 1909, pages 11718-9.

This is the economic paradox precision prepared its report, a three-volume work, certainly one of the first in importance of all documents ever published by the Government of the United States. Naturally, the demand for this report was great. Of the work of the House of Representatives in meeting this demand, President Van Hise says:

In this connection, there should also be mentioned the Committee on Printing of the House, consisting of Mr. Charles B. Landis of Indiana, chairman; Mr. James Breck Perkins of New York, and Mr. David E. Finley of South Carolina. This committee refused to report favorably to the House a resolution passed by the Senate providing for printing 25,000 copies of the report of the Conservation Commission, the President's message concerning the same, the summaries of the secretaries of the four sections, and

the proceedings of the joint conservation conference held in December, and thus prevented the people from gaining information which the Conservation Commission had already obtained. These men should be held responsible to the public for doing all that lay in their power to block the conservation movement, of such vital importance to the Nation.—*World's Work*, June, 1909, page 11719.

The Joint Committee on Conservation in the bulletin above quoted says:

The publication of the report for general distribution has not been authorized by Congress. A limited edition is to be printed as a Senate document.—*Bulletin No. 4*, page 2.

The report has at last appeared as a Senate document. The number of copies for distribution to the 90,000,000 people of the United States is 2,400!

The facts in the above history seem to be clear and conspicuous. The President created the Commission, Congress having failed to do so. Congress furthermore failed to appropriate any sum whatever for the maintenance of the work of the Commission. The House did nothing toward making available the results of the labors of the Commission, embodied in its notable report. The Senate published the report, but in an edition so small as to be hopelessly inadequate for public needs. Further, by means of the "Tawney resolution," Congress did what it could to make the prosecution of the conservation movement impossible in the United States. Of this action, taken at the very end of his term, President Roosevelt said:

The chief object of this provision, however, is to prevent the Executive repeating what it has done within the last year in connection with the Conservation Commission and the Country Life Commission. It is for the people of this country to decide whether or not they believe in the work done by the Conservation Commission and by the Country Life Commission. If the people of this country do not believe in the conservation of our natural resources; if they do not believe in developing our waterways and protecting our forests; if they do not believe in the betterment of life on the farm, and in upholding the interests of the farmers; if they are willing to go on in the old course of squandering the effects of our children's children; then they will uphold the action of those in Congress who are responsible for this provision. If they believe in improving our waterways, in pre-

venting the waste of soil, in preserving the forests, in thrifty use of the mineral resources of the country for the Nation as a whole rather than merely for private monopolies; in working for the betterment of the condition of the men and women who live on the farms, then they will unstintedly condemn the action of every man who is in any way responsible for inserting this provision, and will support those members of the legislative branch who opposed its adoption. * * *

The Republican platform last year said:

"We endorse the movement inaugurated by the administration for the conservation of natural resources * * * the obligation of the future is more insistent and none will result in greater blessings to posterity." The Democratic platform said: "We repeat the demand for internal development and for the conservation of our natural resources, the enforcement of which Mr. Roosevelt has * * * sought."

My successor, the President-elect, in a letter to the Senate Committee on Appropriations, asked for the continuance and support of the Conservation Commission. This Conservation Commission was appointed at the request of the governors of over forty

states, and almost all of these states have since appointed commissions to cooperate with the National Commission. Nearly all the great national organizations concerned with natural resources have been heartily cooperating with the Commission.

With all these facts before it, the Congress has refused to pass a law to continue and provide for the Commission; and it now passes a law with the purpose of preventing the Executive from continuing the Commission at all. * * *

But I call the attention of those who are responsible for putting in this provision to a fundamental fact which is often ignored in discussing and comparing the action of the Executive and the action of the legislative branches of the Government: Neither one is responsible to the other. Each must act as its wisdom dictates. But each is responsible to the people as a whole. It is for the people to decide whether they are represented aright by any given servant; and one element in enabling them to reach a decision must be that public servant's record in such a case as this.

The reader may supply his own comments.



Tempe, Ariz., Showing How Irrigation Transforms the Desert

EDITORIAL

The Mill Tax for Forestry

THE legislature of Minnesota at its last session passed a bill submitting to the people an amendment to the constitution providing that one-fifteenth of a mill upon the assessed valuation of property in the state should be applied to the support of forestry. It is greatly to be hoped that such legislation will become common. The "mill tax" has become widely used for the support of educational institutions, and has much to commend it. It is a fixed source of income practically independent of legislative caprice, and constantly increasing with the increased valuation of the state and the increased needs of growing educational institutions. Similar legislation would provide a practically permanent support for a state forestry policy.

Legislative Support for Student Labor

THE legislature of Minnesota also voted \$5,000 per year for student labor on the forest reserves. This appropriation is peculiarly grateful to those responsible for the Forest School, inasmuch as material difficulty has been encountered in finding opportunity for students to obtain practical knowledge of forestry work. The provision of wages for student workers by the state has much to commend it. Many capable students have not the means with which to pay their way through college. They are willing to earn their way if opportunity can be afforded. In an agricultural college, upon an experiment station, or in the forest connected with a forest school, there should be large opportunity for student labor, educative in itself and providing at the same time maintenance for needy and industrious students. Among the first state legislatures to provide for student labor was

that of Kansas, which, in 1899, voted \$10,000 for 1900, and \$10,000 for 1901, applicable, in part, to student wages. Other legislatures might well follow the example of those of Kansas and Minnesota.

The Washington Forest Fire Association

THAT portion of Washington State lying west of the Cascade Mountains leads the world as a lumber manufacturing area. Nowhere else can be found such forests in close proximity to accessible ocean harbors and transcontinental railways.

Yet the fire peril follows hard upon the trail of the lumber industry. Especially is this true of lumbering in the area in question. During the summer months there is practically no rain, and the forests frequently become like a vast tinder-box. More timber has been destroyed in Washington by fire than has been manufactured into lumber. In 1902 a single fire destroyed more timber in twenty-four hours in Clarke and Cowlitz counties than was that year manufactured into lumber in that state. "On September 10, 1902, there was destroyed a forest which, if spared, would have ultimately yielded good profits to the owners and \$25,000,000 besides to labor and for supplies in western Washington."

Last year was notably the fire year for the United States, yet western Washington suffered far less than usual from fires.

The explanation is to be found in the existence of the Washington Forest Fire Association, composed of corporations, firms and individuals owning timberlands.

This association began by dividing up the state into seven districts, and effecting a working organization. Patrolmen were appointed, and each was made

forest-ranger-at-large and furnished with a badge of authority empowering him to arrest without warrant parties violating the fire laws, and to stop all dangerous burnings of slashings. Each patrolman was furnished with a working equipment, was required to report weekly to his chief, and was sent from time to time letters of instruction from his chief. The patrolmen first posted some 9,000 notices. Under the supervision of patrolmen, many slashings and logging works were burned without damage to green timber. Spark arresters were placed on many locomotives and donkey engines. Close cooperation was maintained between the association and the state fire wardens proper and representatives of the Forest Service.

Eleven hundred two fires occurred in the season (July and August), but only 102 of these were large, requiring extra help and expense. The total number of acres burned over was 18,773, consisting chiefly of slashings and old logging works. Seven hundred forty acres of green timber were burned over, about one-half of which was damaged. Between 600 and 650 extra men were employed in fighting the fires.

The association's work was done at its own expense. To increase its efficiency, it desires a liberal state appropriation for forest fire protection. "The state owns outright timberlands easily worth \$20,000,000;" its annual appropriations heretofore, however, have barely sufficed to pay the salaries and expenses of maintaining a fire-warden in each county. If it would lock its stable door before all its horses are stolen, it should so increase its own fire-preventing and fire-fighting facilities, in connection with those provided by individuals, as to reduce the fire danger on its forests to a level with that existing in well-managed cities.

The Destruction of Fish

IN A news note in this issue will be found an editorial from the *Washington Post* on "Vanishing Food Fish." The point to note is the rapidity with

which our fish supply is being destroyed. This work is being done in part by dynamiting, in part by the pollution of streams with city refuse, in part by the pouring out of fish upon irrigated fields to perish, and even more largely by the destruction of the forests which protect the streams in which the fish might otherwise flourish. And here, again, as in countless other cases, the need must be met by public activity, state or national. Every day's experience emphasizes the necessity for governmental administrative activity. As Herbert Spencer and other philosophic anarchists have foreseen, government as an agent of repression may, with the progress of civilization, enlightenment, and self-control, progressively wane, but government as an administrative agent working in the interest of the whole people must indefinitely wax if the needs of the nation and the race are to be met.

Conservation of Soil Resources

THE United States Department of Agriculture has prepared a farmers' bulletin (No. 342), discussing, among other things, the conservation of soil resources, which it characterizes as "one of the elemental problems of modern scientific agriculture." The bulletin notes that agricultural operations in the United States have taken little heed of "the soil inheritance of future generations." Forests have been destroyed, flood waters from torrential rains and melting snows have swept away the soil, leaving bare rocks behind or soil robbed of plant food. Poor cultivation has rivaled deforestation as a soil destroyer. Not only has the soil suffered from erosion by rain, but from drifting by winds, "so that at the present time the problem of conserving what is left of the natural resources of the soil is of great economic significance."

The agricultural experiment stations have given attention to soil building, and also to scientific conservation of the natural resources of the soil.

The bulletin considers methods of preventing soil washing, such as em-

banking, tile drainage, deep culture, subsoiling, sodding, and planting to crops. The reclamation of washed soils is considered. Terracing is highly commended for hillside farming.

Methods are also discussed for the prevention of the drifting of soil under the influence of winds. Among the methods advised are frequent rotation in long, narrow lands, increasing the water-holding power of the soil, leaving the ground uneven after seeding, the preservation of wooded belts in north and south strips, and the planting of windbreaks. Says the bulletin:

Considered in its general aspects, the work which the agricultural experiment stations have done along the lines of preventing the washing and drifting of soils is of great economic significance. Means for preventing the further waste of the natural resources of the soil have been discovered. If these principles are put into practise, large tracts of land now useless can be brought under cultivation, and if these lands are worked in accordance with methods of restoring and maintaining soil fertility, which the stations and this department have discovered and published, the extent of the wealth-producing power thus conserved to the farmers of the United States will be enormous.

Dry-land Farming

TWO practicable methods for reclaiming semi-arid lands have been found; the first is irrigation, the second is dry-land farming.

Dry farming has been defined as "farm operations under limited rainfall in districts where irrigation water cannot be obtained or where the supply of irrigation water is inadequate to meet the requirements of the acreage."

Under irrigation the water is stored in reservoirs and turned upon the land when needed; under dry farming the water is stored in the soil itself.

Dry farming demands the establishment of a natural reservoir in the soil by the conservation of the limited rainfall or other form of moisture through methods by which waste and evaporation are prevented.

A dry farmer is a man who, in a region of rainfall under twenty-five inches annually, cultivates the land that has, in the past, been deemed worthless, and

conserves the moisture so that it is sufficient for his crop.

The dry farmer recognizes that land commonly regarded worthless for agriculture, frequently receives sufficient rainfall per year to meet the needs of farm life, much of which rainwater, however, is permitted to disappear through evaporation. The dry farmer devises plans, some of which were explained in CONSERVATION for March (page 173), whereby this evaporation may be reduced to the minimum. In addition, drought-resisting plants are sought the dry world over, and introduced.

The success of dry farming means the bringing into use of millions of acres of now almost worthless land in the semi-arid West, not to mention similar lands in other places. In fact, the Dry Farming Congress announces that there are 200,000,000 acres of arable lands awaiting development by the dry-farming method.

Though dry farming is in its infancy, the results already reported are most encouraging. Land once sold for taxes is even now producing every variety of cereal, vegetable and fruit. From a drug on the market, at 50 cents an acre, to active market value, at \$25 an acre, is by no means an unusual advance. Among these results, may be mentioned the following:

One farmer exhibited at the Dry Farming Congress a sample of rye raised without irrigation. It stands three feet six inches high and is fully headed out, although plucked before it had matured. The same farmer has forty acres of dry-farm wheat which, he says, promises to yield a banner harvest. Another farmer claims to have raised a wheat crop last year, all on dry land, yielding him \$35,000. He now has 3,836 acres, and a comfortable fortune drawing interest. Another farmer raised fifty-one melons on one square rod of dry land. Still another dry-land farmer quoted has 1,320 acres, representing the investment of part of his profits from dry-farm wheat and oats. In addition he is reported to have nearly \$100,000 in cash and other possessions.

Three dry-farming congresses have already been held, and the fourth will be held at Billings, Mont., October 26-28 next. Much interest is manifested in the meeting. The Chicago and Northwestern Railroad will gather samples of farm products in western Nebraska and Wyoming, and, with several dry-farming experts, will run a special train, advertised in advance to make a trip, and give instruction at points along the line. Chambers of commerce are actively encouraging preparations for the congress, and interest is being developed by means of street meetings. Hundreds of Montana settlers, as well as established farmers, are joining the congress in order to avail themselves of the practical instruction in dry-land agricultural methods. The congress has a membership of more than 4,000, and expects its membership to exceed 10,000 before the Billings meeting.

Mr. L. Baeta-Neves, an eminent civil and mining engineer, and chief engineer of the technical department of public works and industries in Brazil, has been appointed foreign vice-president and corresponding secretary of the congress. His letter in response indicates the deep interest of Brazil in dry farming, which country is taking steps to reclaim its own arid lands.

One of the triumphs of dry farming is durum wheat. This wheat has been tested by the United States Department of Agriculture, and found superior even to the celebrated Minnesota spring wheat. The wheat growers of the dry-farming regions have announced a "durum bread day," on which the whole country is asked to join in eating durum bread.

Dry-farming experts now believe that the results of their experiments prove that farming in its broadest sense is decidedly in its infancy, and that dry-farming methods are among the most important factors in its development.

The Riot of the Rivers

A GAIN appear the familiar reports of floods, with their terrible damage. Once they were regarded as the inevitable

visitations of an inscrutable Providence. To-day the world knows better. The plague is not inevitable. Modern medical science, hygiene, the destruction of insects disseminating germs, and the like, are banishing plagues and rendering pestilences wholly needless. Men shivered with cold until fire was discovered. They blistered with heat till they learned how to avail themselves of ice in summer. They trudged on foot till they devised means of transportation now culminating in the airship. They went naked until they invented clothing. They cowered before the lightning until they conquered it and made of it a willing servant.

There must be refuge! Men
Perished in winter winds till one smote fire
From flint-stones coldly hiding what they
held,
The red spark treasured from the kindling
sun;
They gorged on flesh like wolves, till one
sowed corn,
Which grew a weed, yet makes the life of
man;
They mowed and babbled till some tongue
struck speech,
And patient fingers framed the lettered
sound.
What good gift have my brothers, but it came
From search and strife and loving sacrifice?
—Edwin Arnold

Man no more needs to surrender to the flood than to the other forces and agencies named. Like them, he may transform it from a bane into a blessing; from a merciless master into a supple slave. What he needs to do is to hold back the surplus water and release it in his time of need. By means of two agencies he may hold back this surplus—the one is the forest, the other is the reservoir.

Does he want facts regarding the forest? Then let him apply to the United States Forest Service. Would he know of the reservoir? Let him ask the United States Geological Survey.

The world is not in ignorance on these matters. It simply remains for the statesman to apply the knowledge already possessed by men of science and engineers. When will he do it?

Building a Nation

In our news columns appears the proposal of Mr. Arthur Hooker, secretary of the board of control of the National Irrigation Congress, to memorialize Congress to borrow \$5,000,000,000 for drainage, irrigation, deep waterways, good roads and forests.

The press swarms with comments on this proposal, few apparently hostile.

It must be admitted that the proposal looks big; yet we must become accustomed to big things.

Some years ago we had our first "billion-dollar Congress." An economical member exclaimed against the unheard-of extravagance. Another member, however, in replying, reminded the first that ours is "a billion dollar country."

Oceans cannot be crossed with row-boats nor stellar places penetrated with spectacles. Great ends demand appropriate means.

The American people face the task of Nation building—the greatest task which ever confronted a people. Already we are looking forward to the time, not far hence, when our population will number 150 and 200 millions, and it has been demonstrated that our resources are going at a rate which, unless checked, would in a few generations embarrass even such a population as we have now.

We cannot awake too soon to the situation.

The work suggested by Mr. Hooker must be done if our people would avoid hardship, even calamity. Now, who is to do it?

Obviously, individuals cannot, and corporations and trusts will not. At the best, all these agencies can but help.

Tasks of such magnitude, if performed at all, must be performed by government—municipal, state and especially national.

Further, they cannot be performed without money.

And whence shall come the money?

A moment's reflection must convince any thoughtful mind that no Congress will vote an adequate sum out of current

revenue; neither are the American people prepared for the establishment of any system of taxation which would raise the funds in time.

There is but one other way in which the money can be obtained; namely, by borrowing.

Many of our people have developed a constitutional dread of debt; they look upon bonds as marks of bondage.

The burnt child cannot be blamed for fearing the fire.

Still, the American bonded debt has largely ceased to be a burden. The interest on our national debt, \$1.09 per capita in 1882, had shrunk in 1908 to 24 cents per capita.

Nevertheless, if it were proposed to borrow any considerable sum on the same basis as our war loans, we might still rightly hesitate. But Mr. Hooker's proposal is quite different. "Congress," he says, "will not be asked to appropriate a penny. The returns from the improvements would pay off the bonds." The Government would simply act as a banker, as it does now for the various irrigation projects. The proceeds from sale of reclaimed lands alone, he estimates, would justify the expenditure of \$2,500,000,000.

From facts at hand proving conclusively the profitableness of drainage, reclamation, deep waterways, good roads and forestry, it should be evident that the payment even of \$5,000,000,000 for a utility so vast and on a hundred years' time, would be a trivial investment for the American people to make.

There is one question, however, that should be carefully considered. How are the American people, as a people, to obtain the chief benefit from a series of enterprises so gigantic?

Selling the lands after they have been reclaimed will undoubtedly repay the entire cost, including interest. Even so, the people as a people may receive but a small percentage of the actual value created through their initiative and based upon their credit. If they would receive a larger percentage, they may reflect upon the lesson taught by the sixteenth section of land in the heart of Chicago, which belongs, not to private

individuals or to corporations, but to the school board of that city.

So long as the people as a people retain these lands, every stroke of labor bestowed, every dollar of capital invested, every unit of increase in the population upon these lands adds to their value, and consequently to the wealth of the American people as such; but when once the people have parted with the lands the value goes to others.

The Conservation of Human Resources

OF ALL our resources the most important are our people. Rome is said to have fallen because of "a failure in the crop of men." Whatever fate might befall our material resources, such a crop failure would inevitably end our own career as certainly as it ended that of the World Empire.

We place a cash value upon the horse, the ox, the swine. At an earlier day we placed it upon the black slave. How many, however, recognize in the citizen a national asset, and realize that premature death or impaired vitality of men and women is a loss to the Nation in precisely as real and valid a sense as is the loss from the burning of buildings or the swallowing up of territory by an earthquake?

A clearer view was had by the National Conservation Commission. In its report of December 7 may be found a section entitled, "National Efficiency." The report recognizes that the length of human life may be materially extended and the death rate materially diminished. Our annual mortality from tuberculosis is placed at 150,000. "Stopping three-fourths of the loss of life from this cause and from typhoid and other prevalent and preventable diseases, would increase our average length of life over fifteen years." More than half the illness in the United States the Commission holds to be preventable. Following this, they say:

"If we count the value of each life lost at only \$1,700, and reckon the average earning lost by illness as \$700 per year for grown men, we find that the eco-

nomic gain from mitigation of preventable disease in the United States would exceed \$1,500,000,000 a year."

In closing, the Commission wisely suggests the concentration of the several governmental agencies now exercising health functions into "a greater health service worthy of the Nation;" in other words, into a bureau of public health.

Our common failure to appreciate the public significance of health, longevity and physical vigor on the part of our people is but another of the dead sea fruits of the rampant individualism which, until yesterday, characterized us as a people. If an individual died, we might sympathize with his family, but we experienced no sense of public loss. If thousands of our population rotted in slums, we saw in this fact merely a disgusting condition, which we attributed primarily to the shiftlessness and unthrift of the slum dwellers; possibly we tossed a coin in the name of charity and dismissed the matter from our minds. If tens of thousands of children toiled in factories when they should have been improving minds, morals and physiques in school, we thought of the condition primarily as a business necessity unfortunate only for those immediately involved, if even for them.

One of the few redeeming features of the calamity known as war is that it compels a nation and its leaders to take a social rather than a purely individual view of human life. A great war is largely a test of resources; among these, human beings rank foremost in importance. In numbers, vitality, energy and spirit, they are vital factors of military success. The nation which, with a military future before it, permits whole sections of its population to waste away through disease, poverty and dispiriting conditions, ranks in folly with the nation which deliberately throws its powder and ball into the sea.

But a point which all have not yet grasped is that international competition need not be exclusively military; that there are battles of bourses, struggles for markets, and contests for supremacy or leadership in a thousand different

ways; and that, in every such contest, the people themselves, in the long run, constitute a significant, if not the determining factor. For example, it is generally understood that Germany's system of popular education has weighed mightily in her favor in her long competition with France. Again, the long-continued and fatuous persecution by French monarchs of the Huguenots, culminating in 1685 in the revocation, by Louis XIV, of the Edict of Nantes, in consequence of which France lost more than a million of her most intelligent, enterprising and industrious citizens, is recognized as a chief cause of national weakness long enduring.

In the light of such historical evidence, which might be multiplied at will, it should seem superfluous to argue that the conservation of human resources is a national duty of the first magnitude. Nevertheless, from the standpoint of the *laissez faire* statesman, no such duty exists. Unemployment, unskill, poverty, misery, disease, are matters of individual concern with which lawmakers wrestling with the mighty problems of tariff and currency have little concern.

Fortunate it is that President Roosevelt, shortly before retiring from office, established here, as in so many other regards, a new precedent. On January 25-6 last there assembled in Washington, on the invitation of the President, a conference on the care of dependent children. In this the President took the most lively interest, following its adjournment with a special message to Congress declaring that "the interests of the Nation are involved in the welfare of this army of children no less than in our great material affairs," urging the establishment of a Federal children's bureau, "which shall investigate and report upon all matters pertaining to the welfare of children and child life, and shall especially investigate the questions of infant mortality, the birth rate, physical degeneracy, orphanage, juvenile delinquency and juvenile courts, desertion and illegitimacy, dangerous occupations, accidents, and diseases of children of the working classes, employment, legislation affecting children in the several

states and territories, and such other facts as have a bearing upon the health, efficiency, character and training of children," pointing to the fact that "the state has always jealously guarded the interests of children whose parents have been able to leave them property by requiring the appointment of a guardian," and pointing out that "the interests of the child who is not only an orphan, but penniless, ought to be no less sacred than those of the more fortunate orphan who inherits property."

In the same spirit is the more recent utterance of Prof. Graham Taylor:

"The child is coming to be as much of a civic problem as it ever has been a family problem. Upon the normality of its children the strength and perpetuity of the state depend, as surely as the dependency and delinquency of its children undermine the prowess and menace the life of the state. The education and discipline, the labor and recreation of the child figure larger all the while in our legislation and taxes, our thinking and literature."

For all of such utterances we may be profoundly grateful as evidences of a growing recognition of the importance, from the public standpoint, of the life, health, well-being and normal development of the citizen, and of the propriety and necessity of legislation and administration, municipal, state and national, to promote the highest well-being of every man, woman and child in the Republic.

Where Is Conservation to Stop

THE conservation idea grows by what it feeds upon. We began in this country by conserving forests, then we took up irrigation, waterways and the like until the movement was launched a year ago for conserving all natural resources.

Attention thus far seems to have been given chiefly to material, subhuman resources. Yet at the White House Conference Mr. MacFarland urged the conservation of beauty, quoting Mayor McClellan that, "It is the country beau-

tiful that retains the love of its citizens," and William Morris, who urged humanitarian efforts, "until the contrast is less disgraceful between the fields where the beasts live and the streets where men live."

Such suggestions lead directly to the thought of conserving human resources, including physical health. The *New Haven* (Conn.) *Journal-Courier* says editorially:

It is now generally recognized that bodily health is quite as much to be enumerated among the resources of the human race as are the forests, the mines, or the streams. * * * But, like many good institutions, the resources movement has kept on developing. Its latest department of activity is in the realm of safety. It is not difficult to see that bodily safety is quite as important as bodily health. Both diseases which can be prevented and dangers which can be averted have in the past made great inroads among the numbers of our skilled workmen and our most useful citizens.

Mention is made of the efforts of Germany to make industrial conditions of life in factories safer. The Director of the Imperial German Bureau of Statistics is quoted as saying:

One million marks, in wage-earning efficiency annually, we save Germany through our museums of safety, sanatoria, and other forms of social insurance.

The *Journal-Courier* continues:

Much more will certainly be heard in the immediate future as to possible means of safeguarding the lives and limbs of American workmen in their shops and factories. It is a great problem which concerns the employers, who are held strictly to account in these days under the employers' liability laws, quite as much as it does the employees.

At the White House Conference, Mr. John Mitchell, speaking of the wasteful production and consumption of coal, said:

Our extravagant wastefulness in the use of our fuel supply, both in production and consumption, is equaled only by our criminal disregard of the personal safety and the lives of the men who toil in the mines. For every 100,000 tons of coal produced, a mine worker is killed and several are seriously injured; for each 1,000 men employed 3.40 are killed annually. Last year nearly 2,500 men were killed and more than 6,000 were seriously injured in the mining industry

of our country. No other country in the world shows so large a percentage of fatalities. Indeed, in those foreign countries in which mining is most hazardous, the proportion of men killed to the number employed is from fifty per cent to seventy-five per cent less than in our country. It is a sad commentary on our vaunted civilization that more men are killed or crippled in mining in the United States than in any other nation on earth.

As a matter of fact, there seems to be no logical stopping place for the conservation movement short of the conservation of all those materials, forces, agencies and conditions which make for the highest, completest well-being of every human soul, and of the race itself.

Governor Fernald's Proposal

Gov. Bert. M. Fernald, of Maine, in his inaugural address, said:

Under state direction, the time is at hand when we must replant forests carelessly destroyed. The state can produce pine and spruce trees for a very small sum per thousand. A state water-supply commission naturally would cooperate with the forest and game commission to establish nurseries of forest trees.

This is an up-to-date proposal. Following it, *Collier's Weekly* presents a plan to afforest over 800,000 acres of abandoned, forestless land in New Hampshire, meeting the expense by a long-term bond issue. It is estimated that the investment would prove profitable financially thirty or forty years hence, in addition to which the timber resources of the state would be greatly increased, and waste land utilized.

With these two proposals may be placed that of Great Britain's budget appropriating \$1,000,000 to reforest waste lands in England, Scotland and Ireland. These are examples of the types of government which the present age demands—a government which, instead of merely playing policeman, strips off its coat, rolls up its sleeves, and aggressively attacks the problem of making state or nation more habitable, and life better worth the living for every citizen, present and to come.

NEWS AND NOTES

Canadian Forestry Association Meeting

The executive committee of the Canadian Forestry Association extends a cordial invitation to the officers and members of the American Forestry Association to attend and take part in a special meeting of this association to be held at Regina, Sask., Canada, on September 3 and 4 next. The British Association meets in Winnipeg just prior to this, so that cheap railway rates will prevail. Those attending the Seattle Exhibition may return east through Canada, in which event they will be able to stop off for a day at Regina without added cost. For further information they may write to James Lawler, Esq., Secretary, 11 Queen's Park, Toronto, Ont.

To Protect New Hampshire Forests from Fires

State Forester and State Fire Warden E. C. Hirst has sent the following circular letter to the selectmen of the state calling attention to the law for the preservation and protection of forests, and asking their cooperation in the selection of fire wardens.

"In the act of the New Hampshire legislature of May 1, 1909, entitled, 'An Act to Improve the State System of Forest Protection,' it is provided that the selectmen of all towns and the mayors of all cities, and other citizens, shall recommend to the state forester the names of such persons as may in their estimation be fit to fill the offices of forest fire wardens in the respective towns and cities. The state forester may then choose from the names recommended one competent person in any town or city, or group of towns, at which time the term of office of forest fire warden previously appointed for that town or city, or for any group of towns shall cease, and the new appointee shall serve, the state forester having the power at any time to remove the forest fire warden from office.

"The duties of the forest fire warden under the new law are as follows: He shall, when directed by the state forester, patrol the woods, warning campers, hunters, etc., about extinguishing fires. He shall post fire notices along roads, streams, camp sites and other public places. He shall extinguish all brush and forest fires occurring in his town, and may call such assistance as is necessary. He shall have the power of arrest without warrant, and will be

required to make a report at regular intervals to the state forester.

"The expenses incurred in fire fighting, etc., are to be shared between the town or city and the state. The fire wardens' bill will be audited by the selectmen or mayor, paid by the town or city, after which the state reimburses the town or city for one-half the amount. The remuneration is to be fixed by the forestry commission and the state forester, and I shall be pleased to have you quote me the wages paid for ordinary labor in your community; also what, in your judgment, would be a fair amount per day to pay the local fire warden for his work and for fire fighters.

"In compliance with this law, will you kindly name several persons whom you think well qualified and willing to assume the duties of forest fire warden in your town.—*Manchester (N. H.) Mirror.*

A State Forester

Vermont has set an example which most the other states in the Union would do well to follow. After some years devoted to a discussion of the problem in connection with the ravages of the lumber companies and pulp mills, after seeing her streams diminish to mere rivulets or disappear altogether, the Green Mountain state has engaged a trained forester to devote his attention to the forest areas and to the task of arousing the farmers to the necessity or advantage of the conservation of natural resources. The man engaged for this purpose is a graduate of the Yale Forestry School, and he has had experience in the Government service as state forester of Connecticut. One of his doctrines is that instead of selling the growth of his wood or timber lot just once, the farmer ought to be able to market a lumber crop once in every thirty years, if he takes care that it is properly planted and protected. There has been a state nursery in which young trees are grown, and whose products are offered to prospective purchasers at cost. About 100,000 young trees, principally white pine, have already been sold out of this nursery for planting by farmers and lumbermen. If an official like this state forester can do something toward restoring the streams to their former volume, or even maintain them as at present, he will earn his salary and more.—*Biddeford (Me.) Journal.*

England's Progressive Policy

That policies known in America as Rooseveltian are finding favor in England is evident by the recent speech by the chancellor of the exchequer, Mr. Lloyd George. In addressing the Commons on his budget proposals, he said in part:

"A state can and ought to take a larger and wider view of its investments than individuals. The resettlement of deserted and impoverished parts of its own territories might not bring to its coffers a direct return which would reimburse it fully for its expenditure, but the indirect enrichment of its resources would more than compensate for any apparent or immediate loss. Any man who has crossed and recrossed England from north to south and from east to west, must have been perplexed at finding there was so much waste and wilderness possible in such a crowded little island.

"This brings me straight," Mr. Lloyd George continued, "to the question of afforestation. There is a very general agreement that some steps should be taken in the direction, and I will not say of afforestation, but of re-afforestation of the waste land of this country. Here, again, we are far behind every civilized country in the world. In Germany, for instance, out of a total area of 133,000,000 acres, 34,000,000, or nearly twenty-five per cent, are wooded. In France, out of 130,000,000 acres, seventeen per cent are wooded. In the United Kingdom, out of 7,000,000 acres, only 3,000,000, or four per cent, are under wood. The number of people directly employed in forest work in this country is only 16,000, and yet the climate and soil of this country are just as well adapted for the growth of marketable trees as those of the estates of Germany."

"Recently we have been favored with a striking report of a royal commission, which outlines a very comprehensive and far-reaching scheme for planting the wastes of this country. The systematic operation which the commissioner recommends is a gigantic one, and before the government can be committed to it in all its details it will require very careful consideration by a body of experts skilled in forestry. I am informed that there is a good deal of preliminary work which ought to be undertaken before the government can safely begin planting on the large scale indicated in that report.

"I will tell the house what we propose to do: There is a certain amount of money, not very much, spent in this country in a spasmodic kind of way, on what I may call the work of national development—in light railways, in harbors, in indirect but very meager assistance to agriculture. I propose to gather all these grants together into one national development grant, and to put in this year an additional sum of £200,000 for these purposes. Legislation will have to be introduced, and I will then explain the

objects in greater detail, but the grant will be used in the promotion of schemes which have for their purpose the development of the resources of the country.

"It will include such objects as the institution of schools of forestry, the purchase and preparation of land for afforestation, the setting up of a number of experimental forests upon a large scale, expenditure upon scientific research in the interests of agriculture, experimental farms, the improvement of stock, the equipment of agencies for disseminating agricultural instruction, the encouragement and the promotion of cooperation, the improvement of rural transport so as to make markets more accessible, the facilitation of all well-considered schemes for attracting labor back to the land by small holdings or reclamations of wastes. Every acre of land brought into a higher state of cultivation means more labor of a healthy and productive character; it means more abundant, cheaper and better food for the people."

Women Saving the Big Trees

There is joy in the heart of the western tourist this summer, as well as in the hearts of Californians, because the famous Big Trees are to be saved from the wanton hand of the destroyer.

For years the destruction of the Big Trees has been going on. In 1906 the lumber cut of the Big Trees amounted to 8,500,000 feet. The oldest living things in the world were destroyed for cheap lumber. And while the trees were being cut—for a period of years—a band of California women, headed by Mrs. Lovell White, was making a valiant fight to interest the Government in their salvation.

After repeatedly failing to pass the House, a bill was introduced and favorably voted upon at the last session. By the bill, which was signed by President Roosevelt, the Calaveras National Forest is created, and the Big Trees saved for all time. The 500 and more California women are justly proud of their victory, and Mrs. White, radiant that the loved trees will be protected, has won their salvation by one of the most unique campaigns of lobbying in the history of the country.—Ex.

Fall River to Acquire Woodlands

State Forester Rane, of Massachusetts, is a staunch advocate of the plan advocated by the American Civic Association for the establishment of municipal forests. Through proper forestation of drainage basins and sources of water supply, it is urged by State Forester Rane, citizens not only will be educated in the advantages of forestry, but a source of municipal income will be developed. Forester Rane recently drafted a plan for Fall River which eventually will mean 3,000 acres of woodland.

New Forest Assistants and Their Work

Forty-seven young graduates of nine American forest schools have just received appointments as forest assistants in the United States Forest Service. These men have secured their appointments as a result of passing the regular civil service examination.

Forest assistants are men who have completed their preliminary training for the profession of forestry, as the graduates of law or medicine have completed theirs, and are ready to enter upon practical work.

There is a growing interest in the profession of forestry now, and many young men are asking how to get into it, and what it promises. Gifford Pinchot, United States Forester, in an address to the graduating class in forestry at Harvard University this year, said:

"The Government and the country need more men trained in the knowledge of forestry, and it offers opportunity to make a man's life loom large and to count for much among the many phases of human endeavor. To be a good forester a man should combine something of the naturalist with a good deal of the business man. To know how to use the forest he must be able to study it. He must have, therefore, the power of observation, a fondness for nature, and the ability to penetrate her secrets. He must be resourceful, able to stand by himself, willing to undergo the privations of rough life, and capable of commanding the respect of rough men, who quickly recognize virility and genuineness of character, but will not tolerate pretense or the assumption of superiority. A forester should be sound in mind and body, and should make the fullest college preparation for the service. This service means a free, vigorous life in the open air, and a clear, straight, fine, wholesome, manly condition of life."

Heliographs to Be Used on National Forests

Experiments will be made during the summer with the standard heliographs which are now used in the War Department, for signaling on the National Forests. One of these experiments will be on the Kaniksu National Forest, in Idaho, and the other on the Stanislaus Forest in California.

It is intended to discover whether these instruments will be of use on National Forests to report fires or transmit other messages in areas where there is no quick method of communication. Easy and quick communication to all parts of a forest must be had if fire is to be kept down.

For the administration and protection of the 148 National Forests in nineteen states and territories and Alaska, the Government spent \$2,526,098.02, or about one and one-half cents an acre for the calendar year 1903.

Of this amount \$592,169.19 was spent for permanent improvements, including the construction of 3,400 miles of trails, 100 miles of wagon roads, 3,200 miles of telephone lines, and forty miles of fire lines.

Berlin Spends \$10,000,000 to Buy a Forest

Taking the lead of all cities, American and European, Berlin is spending vast amounts of money in the municipalization of its outskirts, the latest proposal being to acquire for \$10,000,000 a great forest in the so-called Spree district. This is to be developed as a park and municipal water-works. Lying near the city was a sandy tract of little or no use. It was utilized for the disposal of sewage and actually transformed into a healthful and productive spot.

The Biltmore School to Germany

The report that the Biltmore Forestry School will be discontinued with the retirement of Dr. C. A. Schenck from the forestry department of the Biltmore estate is practically confirmed by the news that Doctor Schenck will establish the headquarters of his new school in Germany. * * *

The plans of Doctor Schenck for his school are international in their scope. * * *

Doctor Schenck proposes to continue his forestry school, but instead of having a single fixed location, his students will have the range of the world's forests. It is his intention to locate the principal headquarters of the school in Germany, near the Black Forest, which is one of the most healthful and attractive parts of the empire. The school will be located there for six months of each year, and for the rest of the year will do practical work in the forests of Maine, Wisconsin and eastern Tennessee.

Doctor Schenck has been superintendent of the School of Forestry for a period of about fifteen years, and the school has become noted through his work, as students have come from all parts of the country and several foreign countries as well, for courses in practical instruction in the splendid Biltmore forests. * * *

About twenty-five of his students have signified their intention of continuing the work under his direction, so he conceived the idea of a course of practical study and research in forestry work in the Black Forest, with which he is thoroughly familiar.

The Biltmore school closes on the 1st of November, when Doctor Schenck's relations with the Biltmore estate terminate. About the 15th of the month Doctor Schenck will leave for Germany with his students.

The scheme has found great favor with the students, who see in it not only a chance

to learn forestry on a broader scale than they can do even in such a field as Biltmore estate offers, but also an opportunity for interesting travel while they are studying. It is understood that Doctor Schenck will retain the name of the Biltmore School of Forestry for his new school.—*Asheville (N. C.) Citizen.*

Forestry in Antioch College

Prof. J. J. Crumley, of Antioch College, Yellow Springs, Ohio, will give his time entirely to forestry in the future, largely with the Ohio State Experiment Station. He reports the growing interest in forestry in his part of the country as very manifest, a half dozen now thinking of the subject where but one did five years ago. Good work is being done among teachers, who prove good listeners, thinkers and workers. Professor Crumley lectured to several hundred teachers at Wooster, Ohio, in July.

Forestry Department of University of New Brunswick

Last fall witnessed the establishment of a department of forestry in the University of New Brunswick, at Fredericton.

The course covers four years, the first two paralleling closely the engineering course, with the addition of work in Botany, Forest Botany, and Histology. In the junior year courses are given in Dendrology, Silviculture, and Forest Mensuration, besides Economics, Road Construction, English, etc., and Zoology. In the fall term there is field work in Surveying, Forest Mensuration, and Silviculture. A tract of six square miles near the university serves for practical work, while plenty of room on the college farm is afforded for nursery and seed-bed work in the spring. In the senior year, courses in Lumbering, Technology, etc., will be given. The location of the university on the St. John River affords admirable facilities for studying mills and various lumbering operations, driving, rafting, etc. The city of Fredericton offers a gold medal for the best essay or treatise on "Lumbering and Milling Operations on the St. John River System."

Hon. Chas. E. Oak, manager of the Miramichi Lumber Company, offers to take four seniors this year into his lumber camps from December to March, paying them wages while there, in order that they may learn the woods end of the business, and the forestry department will give them this practical work even at the sacrifice of theoretical instruction. Four seniors and probably eight or ten juniors will take the work this year.

The prospects for building up a forestry department in the university are good, and the interest in forest preservation throughout the province is encouraging. The students have organized a forestry club, and are

very enthusiastic over their work. Nova Scotia will make a forest survey of crown lands, and New Brunswick will carry out the provisions of the public domain act, which provides for a survey of their 10,000 square miles of crown lands.

Utilizing Zurich's Experience

There are in New Hampshire 800,000 acres of land once cultivated, but now abandoned to brush, and the state forestry commission is trying to devise some means to get control of these wastes. If this can be done, the land will be planted in trees, the expense of "taking up" and forestation to be met by a long-term bond issue. It is argued that the investment would prove very profitable thirty or forty years hence. In support of the proposition the example of Zurich, Switzerland, is cited. The people of Zurich some years back, finding themselves without the timber necessary for building and other purposes, took over certain abandoned and denuded lands and planted them with trees. The former barrens are now among the most valuable assets of the city, yielding as they do a net profit of \$15 per acre a year. The *Springfield (Mass.) Republican*, in discussing the New Hampshire movement, says New Hampshire is not the only state that should consider the question involved. And so say we. The question of making denuded forest areas and barrens yield a revenue is a practical one in Virginia to which it is to be hoped the next general assembly will give earnest attention.—*Richmond (Va.) Leader.*

Legislation in Minnesota

Prof. Samuel B. Green has written CONSERVATION as follows:

Our legislature passed a new forest-fire law, which is very much superior to our old law. It requires, among other things, the burning of slashings, gives us a patrol system in dry seasons, and requires county attorneys to prosecute violators of the law, making it a misdemeanor not to do so; it increases the appropriation from \$11,000 to \$19,000 per year. It passed a bill submitting to the people an amendment to the constitution whereby one-fifteenth of a mill tax should be used for the support of forestry. This would, under present valuations, bring in about \$80,000 per year; but, as the valuation is increasing all the time, it will not be long before it will be doubled. A permanent appropriation of this kind would be a great thing for forestry, as it would permit of our planning ahead for a long series of years. It established a new reserve of 2,700 acres for the University of Minnesota, about two miles from Cloquet, which is one of the most important lumber milling centers of this section. By cooperation with the United

States Government and the lumber companies this land can be obtained for about \$10,000. It also appropriated \$2,500 per year to care for the same. It provided an appropriation of \$4,000 per year for the support of the forest school, \$5,000 per year for student labor on the forest reserves, and \$1,500 per year for creosoting wood and similar experiments. For Itasca Park, which is the large reserve connected with the forest school of the University of Minnesota, it appropriated \$10,000 for a new road, and \$14,500 for maintenance and repairs, making the total appropriation for the support of the School of Forestry and the reserves connected with it \$55,500. It also passed a bill authorizing the Forestry Board to accept a donation of 3,200 acres of land from the Pine Tree Lumber Co., together with all the hardwoods, and all the pine, spruce, cedar and balsam under eight inches in diameter, in consideration for which all their timber over eight inches in diameter shall be free from taxes for a period not exceeding ten years. An amendment to the constitution was also passed, and as a result will be submitted to the people, exempting timber lands from taxation.

Minnesota Out of Conservation Plans

None will find fault with Governor Johnson for his refusal to appoint a conservation commission for Minnesota at the present time. The legislature failed to make provision for any such commission, and, while there are men who would serve gladly without personal compensation, the preliminary work would entail a considerable expense, for which no appropriation is available.

The situation is most unfortunate. Practically all of the states of the Nation have joined in the general conservation movement, admittedly one of the most important that has been advanced in this country. Each state is making a study and survey of its timber, mineral and coal lands, considering its waterways and water-power possibilities, and preparing to cooperate with the Federal Government in the work of conserving and developing these resources for the benefit of the people of the individual states and of the whole Nation. When the time comes for active work on the part of the Federal Government in placing its conservation program into effect, the states that have done most in the preliminary work will be the largest sharers in the distribution of Federal funds in aid of the general movement. Minnesota need not expect the Federal Government to do anything for the state until the state does something for itself. The question of conservation of state resources will be one of the live issues for consideration by the next legislature.—*St. Paul (Minn.) Dispatch*.

Railroads for Conservation

A plan by which the railroads are to take part in the conservation movement is announced as the outgrowth of conferences and correspondence between representatives of the carriers and the joint committee on conservation. Preliminary negotiations on the part of the railroads have been conducted by representatives of the American Railway Engineering and Maintenance of Way Association. Attention was also given to the subject of conservation at the recent meeting of the American Railway Master Mechanics' Association, at Atlantic City, N. J. The great quantities of timber, iron and coal used by the transportation lines are the bond of interest between them and the conservationists.

The plan as outlined provides for a systematic arrangement by which the committee on conservation is to give the railroads suggestions as to the most practical method of putting conservation policies into effect. The railway men agree to carry out these suggestions. The conservation authorities have submitted a plan, which is now in the hands of A. S. Baldwin, chief engineer of the Illinois Central Railroad, who in a letter to the conservation committee says:

"On account of the wide areas traversed by the railroads and the great consumption by them of timber and fuel, with their enormous use of iron and steel products, it is believed that the most effectual assistance of the American Railway Engineering and Maintenance of Way Association can be in directing the attention of railroad officials to the excessive wastefulness in the present methods of production of timber and fuel, and the great importance of introducing economies in their use and consumption; also to the importance of economizing in the use of iron and steel products and the possibilities of preservation by protective coatings and otherwise."

With this end in view, the railroad conservation committee has asked for specific suggestions as to the best methods that should be used by railroads in the prevention and control of forest fires. The conservation committee has presented an outline for this work, and with it a statement showing the enormous loss of lumber through forest fires every year.—*Norwich (Conn.) Record*

The railroads also ask information regarding possible economies through use of treated ties, the desirability of by-product ovens in coal territory, the species of trees railroads might profitably plant, the gain through substitution of sawed for hewed ties, and the prolongation of life of steel and iron in bridges. The railroads will also investigate and report to the joint committee on the possibility of substituting other materials for ties and timber.

High Water in the Missouri Valley

For ten days and more following July 4, residents in the Missouri River valley experienced floods. The following are comparative river stages and high-water records:

THE RIVER STAGES

	<i>Feet</i>
Missouri River, 8 a. m., July 13.....	27.0
Kaw River, 9 a. m., July 13.....	23.9

PAST HIGH WATER RECORDS AT KANSAS CITY

	<i>Missouri Feet</i>	<i>Kaw Feet</i>
In 1903, May 31 and June 1...	35.0	37.6
In 1904, July 8.....	27.5	27.5
In 1908, June 15.....	29.5	29.5

The floods are attributed to snow melting in the mountains, followed by rains.

Following are dispatches published by the *Kansas City Star* of July 14:

One thousand persons were driven from their homes, and many thousands of dollars' damage done Saturday morning by a flood in Perry Creek, a small stream which separates the east and west sides of Sioux City, Iowa. A cloudburst north of Sioux City is believed to have been the cause.

Five years ago Ottawa, Kans., had its greatest flood, and confidently set the mark high above any possibility of future flood conditions. At noon last Thursday the town gazed upon a flood more than a foot beyond the previous record. The Marais des Cygnes River stood at thirty-seven feet at the Main Street gauge. Of the bridge itself, only the upper framework was visible.

Communication between North and South Ottawa was cut off by a channel half a mile wide, through which sweeps a millrace which even a skilled boatman could scarcely cross.

Estimates on the number of homeless families were necessarily guesswork. Sections never before reached by floods were tenantless now, swept by wastes of muddy water. Schoolhouses and churches were filled with refugees. A swift current four feet in depth sweeps through the Santa Fe Union Station. The Missouri Pacific Station is in the center of a sea. Railroad traffic is abandoned, and only extensive repairs to tracks and yards can reestablish it. Freight and baggage have been removed to high ground.

Thirty persons, including guests, were in the upper floors of the Marsh Hotel, through which a deep current flowed. Food supplies reached them by boat service.

Osawatimie, the scene of John Brown's exploits, was almost an island.

Rescued by boats across more than a mile wide expanse of swift flood waters of the Marais des Cygnes River, 300 passengers on the Santa Fe train No. 5, westbound from Kansas City, experienced late Wednesday afternoon all the thrills of a rescue from a wreck at sea.

Water was running three feet deep in the center of Marion, Kans., Tuesday afternoon,

due to a four-inch rain above the town on the Cottonwood River.

At Pattonsburg, Mo., Big Creek and Grand River came together. Heavy rains caused the two streams to become lakes without banks or channel. Tuesday night, July 6, the water rose so rapidly that almost before the people were aware water was coming through the doors of their homes. Few persons thought of the possibility of a flood and few made preparations in the way of food supplies.

Wednesday morning found Pattonsburg surrounded by three miles of water, which rose steadily until it reached the second floors of stores and dwellings, driving many people to the roofs. Rain added to the sufferings of the people exposed. Three hundred men, women and children found shelter on the second floor and in the attic of the school building.

At its height the water was from five to eight feet deep in the streets of Pattonsburg.

George Palmer, a harness maker, who had set out on foot to visit neighboring towns, was drowned. His body has been recovered.

Several hundred persons rendered homeless and property loss estimated at three-fourths of a million dollars are the result of a flood which swept through the heart of Springfield late Wednesday night, July 7.

The Missouri River Valley was a vast lake, and the loss to crops was great.

The Chicago and Alton, the Missouri, Kansas and Texas, and the river route of the Missouri Pacific to Jefferson City were entirely out of commission. The Chicago and Alton and Katy tracks were under fourteen inches to five feet of water in the valley to Jefferson City.

At Rich Hill, Mo., the river Marais de Cygnes was five miles wide.

The Grand River at Chillicothe, Mo., was more than twelve miles wide on July 8.

Trenton, Mo., on July 7, was on an island and entirely cut off from all railroad or other communication. Early Wednesday morning there came down Grand River and tributaries the greatest flood in the history of that stream, covering all the lowlands and doing property damage estimated at half a million dollars. A water-spout sent the rise down the stream like a tidal wave, and few of those in lowlands were able to escape. Men were busy with boats all day, rescuing refugees from treetops. No lives were lost.



America's Greatness

Ambassador Jusserand, of France, said recently:

"The farther west I travel the more astonishment I have over the greatness of the United States. If the people of France had such rivers as are in the West they would dam them all and allow none of the water to go to waste. Irrigation is a great thing, especially for the western part of America."

With this may be coupled M. Jusserand's famous declaration, "It is an absolute principle: No forests, no waterways * * * If the Mississippi is the 'Father of Waters,' the forest is the father of the Mississippi."

Conservation of Water-power and Public Land

It will be recalled that Taft recently called down Secretary of the Interior Ballinger for revoking orders of Roosevelt withdrawing lands from speculative land-grabbers. There is no doubt that a water-power trust in the West is working hard to get possession of the water-power of the upper Missouri River. Taft will protect the consumer rather than the man who consumes the country's resources. It is understood that Pinchot, with the assistance of other experts, has drawn up a plan for a general control of water-power including the proper royalty companies shall pay the Nation for use of water-power. In Europe governments have invoked the Roosevelt safeguards. Taft will stand for the consumer.—*Lewiston (Me.) Journal.*

Irrigation Desired for Eastern States

On June 23 the American Seed Growers' Association met at Niagara Falls, N. Y. The special committee appointed to inquire into the irrigation situation presented a report recommending irrigation in the Eastern States. So successful has the scheme proven in the West that the seed men are desirous of testing it extensively along the Atlantic coast.

* * * * *

Burnett Landreth, of Bristol, Pa., advanced a novel idea in his paper on "Irrigation of Old Eastern Farms." He pointed out that the Government had spent some \$14,000,000 for developing irrigation systems in California, Nevada and Arizona, changing their former arid wastes to flowering gardens. It was high time, Mr. Landreth thought, that some attention was given to the farms of the Eastern States. In times of drought, he said, the eastern farmer suffered to such an extent as to make his fruitful years hardly balance the loss of dry years. A system of irrigation reservoirs from Maine to Florida would insure the farmers against loss from droughts. As a beginning, he suggested that the Government appropriate \$70,000, with which to buy a farm of about 100 acres near Washington, in charge of the Department of Agriculture, as an "irrigation kindergarten."

The expense of establishing such a system along the Atlantic coast, he said, would be great, but it would pay tenfold on the investment. In the West the water for the irrigation ditches is had from the mountains, gravity being the power. In the East it would be necessary to establish pumping plants at great

cost. But only some such plan would make farming in the East profitable to-day.—*New York Commercial.*

Progress in Reclamation Work

The big dam on the Belle Fourche irrigation project, South Dakota, contains approximately 1,000,000 cubic yards of material. When completed this dam will be one of the largest earth embankments in the world, and will contain about 1,700,000 cubic yards of material.

The project presents a most imposing scene. Eleven trains of ten cars each loaded with dirt are constantly in view. As the earth is dumped on top of the embankment it is sprinkled and rolled with heavy rollers. The dam is now seventy feet high and 6,200 feet long. A great change has taken place in the valley since the initiation of Government work. From a region given over almost wholly to stock raising, with individual holdings as high as 1,000 acres, the valley is being transformed to a thickly-settled community. New settlers, principally from the Mississippi Valley, are coming in steadily. This is one of the best opportunities in the Northwest to secure a farm at a reasonable price. Land can be bought at from \$15 to \$35 per acre. A new creamery has just been opened, and all lines of business in the town of Belle Fourche are increasing in volume.

The progress of settlement on the Sun River and Huntley projects, Montana, is most satisfactory. Many of the new entry-men have been induced to go to these sections by former neighbors who settled there. Thousands of shade and fruit trees have been set out at the demonstration farms, and the good example is being followed by the farmers, who are planting sufficient numbers to insure plenty of shade.

The schools throughout the Huntley project are well attended. Consequent upon the heavy settlement around Simms on the Sun River project, a large number of children of school age have come to that vicinity, and active steps are being taken toward the establishment of a school at that point. A two-room building will soon be erected, and arrangements will also be made for a school at Fort Shaw. The grading of the streets is adding much to the general appearance of the towns. Stores and other business houses are being erected. At Huntley a skimming plant, which is to be operated in connection with the Billings creamery, is ready for operation.

One hundred eighty men were employed during May at Laguna Dam, Yuma irrigation project, California-Arizona. Sixty of these men were at work on the Arizona side of the river excavating for the canal and protecting the bank below the mouth of the sluiceway. The walls and bottom of the canal heading were also concreted. On the California side the crew was engaged in canal excavation with the steam shovel, the

product being used to blanket the reservation levee and to protect the banks below the sluiceway. The dam has since been completed.

In July a flood of 150,000 second-feet passed over it. Both the dam and the levees which for miles protect the bottom lands held their own. This fact confirms the judgment of the officials that the Colorado River could be controlled and the bottom lands protected from floods, and irrigated.

The Laguna dam is patterned after weirs which have been successfully operated on erratic rivers of the Old World for half a century, and the levees are of the type which experience on the Mississippi River during the past sixty years has proved to be the best.

During June the contractors laid 14,000 cubic yards of masonry on the Roosevelt dam, Salt River irrigation project, Arizona. The masonry was all laid on the south side of the gap through which the water is still flowing from the reservoir. The south end of this part of the dam is at an elevation of 169 feet. Near the gap the elevation is 135 feet. The water in the reservoir is 110 feet deep. The Government cement mill was operated twenty-five days, burning 11,500 barrels and grinding 12,000 barrels of cement. The south canal is completed and work is being pushed on the eastern canal. Work is progressing favorably in concreting the sluicing tunnel.

The Gunnison Tunnel, Uncompahgre Valley irrigation project, Colorado, was advanced 510 feet during June, and but sixty feet then remained to be excavated between headings. There was a great scarcity of labor and the heavy ground in the tunnel required timbering in both headings. The daily flow of water remained practically constant, amounting to 1,126,000 gallons in the east portal and 3,400,000 gallons at west portal. Sixty-five feet of concrete lining were placed in the tunnel and the concrete portal at the west end was built and 200 feet of concrete lining placed in the portal cut. The flow of water in both the Uncompahgre and Gunnison rivers during the month attained the greatest volume of which record has been made.

The tunnel has since been cut through; the workmen met and shook hands.

A contract has been entered into by the project engineer of the North Platte project, Nebraska-Wyoming, on behalf of the Government and the Platte Valley Telephone Company for telephone service in connection with the North Platte project for a period of six years, from July 1, 1909, to July 1, 1915, in continuation of an existing contract which expired July 1, 1909. Twenty-five telephones are provided for in the contract, besides two exchanges and other services.

The Secretary of the Interior has approved a contract entered into by F. E. Weymouth on behalf of the United States with the Nampa-Meridian Irrigation District

and the Payette-Boise Water Users' Association, which provides for the use by the Government of the canals and laterals of the Nampa-Meridian Irrigation District in the reclamation of certain lands belonging to the Payette-Boise project, Idaho, and for the adjustment of expenses of operation and maintenance of the canals and laterals between the respective parties.

The United States is given the right to enlarge or extend the existing canals or laterals of the Nampa-Meridian Irrigation District, the title to all enlargements or extensions to vest in the United States.

The lands involved consist of about 50,000 acres lying within the boundaries of the above-named irrigation district and below their canal.



Five Billions for Development

Mr. Arthur Hooker, secretary of the board of control of the National Irrigation Congress, will present a resolution for the approval by that organization at its seventeenth session in Spokane, August 9 to 14, memorializing Congress to issue three per cent gold bonds running 100 years, to the amount of \$5,000,000,000, or as much thereof as may be necessary, for the following specific purposes:

One billion dollars for drainage of overflowed and swamp lands, thus reclaiming an area equal to 100,000 square miles.

One billion dollars for the reclamation by irrigation of 40,000,000 acres of arid and semi-arid lands, now partly or wholly waste.

One billion dollars to construct and improve deep waterways, to develop thousands of miles of territory now without adequate transportation facilities.

One billion dollars for good roads and national highways, for the lack of which the loss to the farm area of the United States is approximately \$500,000,000 annually.

One billion dollars for forest protection, reforestation and conservation of the forest resources, thus assuring timber and lumber supplies for centuries to come.

Says Mr. Hooker, in explaining the plan: "Congress will not be asked to appropriate a penny. The returns from the improvements would pay off the bonds. The Government would simply act as a banker, as it does now for the various irrigation projects. The bond issue would provide ample funds as required to carry out the work in the several divisions, at the same time giving the best possible collateral to those investing in these securities. Government figures bear out the statement that there is enough good land overflowed in Minnesota, Wisconsin, Kansas, Nebraska, Louisiana, Kentucky, Tennessee, Mississippi and Maine to make an area as large as the state of Missouri, or more than 44,000,000 acres, while in the eastern, central and western states there is more than as much more, or about 100,000,000 acres in all. At a conservative estimate of \$25 an acre, the sale of this reclaimed land would justify the expenditure of \$2,500,000,000, or

150 per cent more than is required to drain it. This land would support from 2,000,000 to 3,000,000 population. Approximately 40,000,000 acres of lands in western and southwestern states are adapted to irrigation, which, if reclaimed at an average cost of \$25 an acre, would be worth not less than \$200 an acre, or a total of \$8,000,000,000, and provide homes for more than 8,000,000 persons. The economic value of irrigation cannot be measured in dollars and cents, but crops of from \$500 to \$1,000 an acre are not rare in the irrigated districts. There are already 14,000,000 acres under irrigation, and the Reclamation Service estimates it will have reclaimed 2,000,000 acres, at a cost not exceeding \$70,000,000, before the close of 1911. The construction and improvement of the deep waterways required to provide better and cheaper transportation facilities is, I believe, a 100 per cent investment, from the fact that two-thirds of the bulky freight could be shipped by water routes, at a cost to the shipper of not more than one-sixth the present rail rates. The importance of this becomes apparent when it is remembered that the food question is becoming a world problem. It is estimated that the average annual loss from poor roads is 76 cents an acre, while the average increase resulting from improving all public roads is \$9.

"The value of our forests was never better appreciated than to-day. Within the arid and semi-arid portions of the Western States nearly 124,000,000 acres are covered with woodland, of value for fuel, fence posts and other purposes essential to the success of the farmer. There also 97,000,000 acres covered with heavy forests having commercial value for timber and logs. Reforestation and conservation of these vast resources are necessary to provide future generations with timber and lumber supplies."

Five Billions for Irrigation

Somebody is shocked because the advocates of irrigation by the National Government suggest spending five billions within a few years, putting water on dry, desert land. One brilliant paragraph writer says: "Only five billions! The national irrigators are too shy. Make it a hundred!"

Yes, make it a hundred billions, by all means, if that amount is required for irrigation, and if the country in the centuries ahead can spare it—which it can.

No money can be spent more wisely than the money spent to supply water, fertility and crops to soil dry and useless without the water.

Five billions seems like a good deal of money, but it isn't very much if it is well spent. The nation that can talk glibly about piling up battle-ships, instruments of death, at ten millions apiece; the nation that can give that fortune of a thousand millions to an individual; the nation that can spend millions for whisky that ruins the brain and

the body—can well afford to spend billions on irrigation, which is the improvement of the earth.

The greatest source of wealth that we know is water. The water is drawn up from the salt ocean, scattered over the land by the clouds. The rain pours into the Great Lakes. And this water, worth many times five billions, rushes out into the ocean, where it is lost, taking with it through the mouth of the Mississippi and other great rivers the valuable soil worth many millions more.

Before the waters of our lakes and rivers run back to the ocean human ingenuity should take all that is needed to scatter over the dry fields. Even the fields that we call fertile need more water, and ought to have it.

Farmers impoverish themselves paying thirty and forty dollars a ton for fertilizer. But the fertilizer without the water is useless, and with irrigation the water would not cost half a cent a ton.

When the Government spends its millions and billions on irrigation it will be doing the real work of the human race on this earth. Our work here is to develop the earth, make it into a beautiful park, fertile, every inch irrigated and cultivated—a park in which human beings may live together in peace and plenty, in harmony and friendship.

This work is going to be done, and the advocates of irrigation help it along. The day will come when not a dollar will be spent for a rifle, a bullet, a battle-ship or a lawyer. Emulation will replace competition everywhere. Contests between men will be contests of the mind, each struggling, not to help himself, but to help the whole of humanity by adding to the wealth and knowledge of the race.

This rich country, with its great lakes, its enormous fortunes, its vast tracts of land that need irrigation, and that will repay irrigation with ten dollars for one, ought to lead in the task of beautifying this earth.

The people of France, after the war with Germany, were condemned to pay a fine of five thousand millions of francs to Prussia. The sum was raised by the French people, not only once, but fourteen times over.

France, a small nation, at the end of a disastrous war, was ready with fourteen billions of dollars to pay a war debt.

Would it be such a horrible thing for this country to raise five billions of dollars to pay part of man's debt to this earth that supports us?—*Boston American*.

Bond Issues for River Improvements

"One of the most vital questions of the hour, and in some particulars the most vital, eliminating tariff revision from consideration, is the question, 'How will Congress meet the demands for improving and maintaining the waterways of the United States?'"

This statement was made by Representative Richard Bartholdt, of Missouri. Continuing, Mr. Bartholdt said:

"I have seen the movement for a waterway bond issue grow from a tiny thing to an almost national demand." It has been and is the practise of Congress to first provide for all the legitimate needs of the Government, and then, if anything is left, to set it aside for waterways, public buildings and so forth. If all the revenues are needed for the regular expenses of the national household, it is the doubtful privilege of the friends of internal improvements to hold the bag. I venture to say that if the Government is to enter upon a policy of favoring systematic internal improvements, a regular annual budget should be provided for that purpose, the same as for the army and navy and all other departments.

"An issue of two or three per cent bonds to the amount of \$500,000,000, to be distributed over a period of, say, ten years, will suffice to complete all great waterway projects whose improvement has received the official recommendation of the United States engineer corps, and will forever solve the problem of the permanent improvement of our great waterways.

"I am well aware of the existing prejudice in some sections against an issue of bonds in time of peace, but that prejudice does not exist in the district which I have the honor to represent. This prejudice would be justified if the Government proposed to mortgage the future in order to meet its running expenses. But in the contemplated waterway-bond issue an extraordinary expenditure would be made, with a return for every dollar, and with all the guaranties of a permanent investment for the lasting benefit of the present as well as future generations."

The River as a Carrier

John Callan O'Laughlin gives an interesting summary of the report of the board of engineers appointed to investigate the matter of a fourteen-foot channel between the Lakes and the Gulf.

This report, be it remembered, finds that the plan is feasible, but recommends against it. The report stated, as we remember, that \$150,000,000 would be required to put fourteen feet from New Orleans to Chicago, and \$5,000,000 a year would be needed to maintain it. In these days of rapid development the commission felt that these figures would show the plan to be futile.

It we were to get fourteen feet from Chicago to New Orleans it would be equal to all the freight a six-track railway could haul. And a six-track railway between Chicago and New Orleans would cost, probably, \$400,000,000. The \$5,000,000 for upkeep is a bagatelle. The Illinois Central spends more than that amount for the upkeep of its lines from Cairo to New Orleans.

In order to secure the benefits of cheap transportation by water, more is necessary than merely a channel. The railroads of this country, like the railroads of Germany,

France, and England, will eventually come to that condition where certain heavy material cannot be hauled by them at a profit. In these countries coal, rock, lime, salt, wood, cement, and brick are hauled by barges through canals or on rivers.

Heavy structural iron is hauled on the rivers for the reason that cars in England are not made for the transportation of this heavy material.

There is established in these countries, as it were, a community of interest between railroads and river transporting companies. Switch-yards are established on every water-front. The unloading of boats is done by electrical machinery, and the transferring to cars is done in the same way.

There is a public warehouse at every water-front in these countries, and goods are carried by machinery into these warehouses and are distributed.

The time will come in this country when the conditions will force traffic into the water, and this is the main reason why the continued work of the improvement of the rivers should be pushed.—*Memphis Commercial-Appeal*.

The Lesson of the "Soo"

That the loss in a single year from the discontinuance of the operation of the canals at Sault Ste. Marie, Michigan and Ontario, would amount to between \$300,000,000 and \$400,000,000 in added freights alone, is a fact developed since the recent temporary loss of control of the waters of the Canadian canal at that point. The engineers of the War Department furnish the figures which make it possible to reckon this loss and, incidentally, to throw a strong light on the value to the country of such aids to commerce as these canals.

St. Mary's River connects lakes Superior and Huron and around its falls are built the canals. That on the Canadian side has one lock, while the American canal has two locks, side by side. A vessel jammed its way through the Canadian lock on June 9 and the torrents followed it and became uncontrollable. For two weeks the engineers of two nations were puzzled as to the manner of shutting off that flow; but the feat was finally accomplished.

But before this had been done the question was raised as to what would be the result if the onrush could not be stopped and a similar accident happened on the American side. The answer as to freight advances was given in exact figures by Government engineers who for years have kept tab on the freight that passes through these canals, but the damage to business generally is beyond computation. The freight accustomed to these water-rates would have had to go by rail and would have cost, on the basis of the figures for 1907, \$364,000,000, whereas by water the cost would be but \$38,000,000. These actual figures compiled by the Government engineers show that freight hauled by

rail that year cost nine and one-half times as much as that handled by boat on the Lakes. The prosperity of all that region tributary to the Lakes has been developed because of these rates and depends upon them for its continuance.

There is before Congress the proposal to adopt a policy for the improvement of all the waterways of the country that offers unquestioned possibilities, and a consequent carrying of the favorable freight rates of the Great Lakes to many sections of the country. A joint commission has been appointed by Congress and instructed to report how this may be done. The report will be submitted to the next Congress and action on the part of that body is expected to follow.

The question that most worries the legislative body is the matter of financing so monstrous an undertaking. In an attempt to solve this riddle the advocates of waterways have come to the conclusion that there is but one answer—the issuance of bonds. They cite the fact that the Panama Canal is being actually built upon this basis and that all private enterprise, such as railroad building, is always accomplished in this way. In fact, there is no other way of accomplishing so great a task, and further, the benefit is chiefly to posterity, and posterity should help pay for it. These men are enthusiasts, and hold that if the cheap rates offered by water transportation are ever to be extended to the people the work should be done now. Among the people none are found who are not willing to accept these low rates.

Mount Pocono Meeting of the Pennsylvania Forestry Association

The summer meeting of the Pennsylvania Forestry Association was held as advertised at the Pocono Manor, near Mt. Pocono, Monroe Co., Pa., July 7-9. Among the features was an address by Dr. J. T. Rothrock on "Desolate Pennsylvania."

Forest Conference in the White Mountains

A forest conference will be held in the White Mountains under the auspices of the Society for the Protection of New Hampshire Forests, at Mt. Pleasant House, Bretton Woods, N. H., Tuesday evening, August 3, and Wednesday, August 4.

The following bodies will meet in connection with the conference: The directors of the American Forestry Association, the state foresters of the Northeastern States, and the New Hampshire State Forestry Commission.

The Society for the Protection of New Hampshire Forests will hold its eighth annual meeting at this time.

Following is the program:

FIRST SESSION, TUESDAY EVENING, AUGUST 3

HON. FRANK W. ROLLINS, *Presiding*

8:15. Sonata Pathétique, No. 8...*Beethoven*
Miss Selma L. Stahl.

8:30. "Forest Conditions in the Adirondack and Catskill Reserves, with Special Reference to Reforestation" (illustrated by lantern photographs), Mr. James S. Whipple, State Forest Commissioner, New York.

SECOND SESSION, WEDNESDAY MORNING

9:30. The eighth annual meeting of the Society for the Protection of New Hampshire Forests. Report of the forester; report of the treasurer; election of officers.

"The Forestry Work of the Women's Clubs," Mrs. Joseph Stenifeld, Forestry Chairman State Federation.

10:30. Conference with the Directors of the American Forestry Association, opened by a discussion of "The Timber and Stone Act, and the Appalachian Bill," Mr. George H. Maxwell, of Chicago, Executive Chairman of the National Irrigation Association. (Of Mr. Maxwell's work in connection with the irrigation bill, Mr. Joseph Cannon said: "We had to get out of the way of the steam engine.")

11:40. "The Grover Cleveland Memorial Road in Tamworth, N. H.," Dr. John H. Finley, President of the University of the City of New York. (President Cleveland established the first National Forests.)

THIRD SESSION, WEDNESDAY AFTERNOON

2:30. Conference with the State Foresters, opened by a discussion of the New Forestry Law in New Hampshire, by Mr. Robert P. Bass, President of the State Forestry Commission.

Other topics: "Forest Fire Patrol and the Mountain-top Observatories in Maine;" "The Proper Scope of a State Forest Service," the Forest Commissioner of Maine, Mr. Edgar E. Ring; the State Forester of Vermont, Mr. Austin F. Hawes; the Secretary of the Massachusetts Forestry Association, Mr. Edwin A. Start, and others, will take part.

FOURTH SESSION, WEDNESDAY EVENING

"Forest Conditions in the White Mountains," illustrated by lantern photographs; Mr. Philip W. Ayres.

Forestry Legislation in Pennsylvania

Forest Leaves for June contains a two-page resume of Pennsylvania's new forestry legislation.

H. R., 13, authorizes the department of forestry to grow young trees and distribute them to those who will plant and care for them.

H. R., 147, is designed to create a system of fire wardens, these to suppress and prevent forest fires on woodlots and wild lands; \$50,000 appropriated.

H. R., 159, provides that, within certain limitations, all forest reserves shall be subject to an annual charge of 2 cents per acre for school purposes.

H. R., 175, is designed to protect trees growing by roadsides and within road limits, and provides penalties for injuring or destroying trees.

H. R., 253, permits the acquisition of forest or other suitable lands by municipalities for the purpose of establishing municipal forests.

H. R., 542, appropriates \$374,500 for the department of forestry.

H. R., 553, appropriates \$20,000 for salaries of instructors, stationery, maintenance, etc., and \$1,000 to equip laboratory.

H. R., 557, sets aside \$100,000 for the purchase of lands for forest reserves, and \$100,000 for a similar purpose for the fiscal year beginning June 1, 1909, and an equal amount for the fiscal year following.

The following measures were defeated:

H. R., 226, to regulate the management of timberlands in Pennsylvania for the purpose of preventing floods and droughts, conserving water supply, and securing favorable conditions of water-flow.

H. R., 228, for purchase and distribution of tree seeds.

H. R., 244, to protect privately-owned woodlands from fire, theft, and other damage.

H. R., 257, providing for the protection of the state forest reserves.

H. R., 286, transferring to the department of forestry the control and management of all public highways not improved state highways bordering on or lying within state forest reserves.

H. R., 383, designed to establish auxiliary forest reserves, and punish violations.

H. R., 386, to provide for taxation of auxiliary forest reserves.

H. R., 469, to increase privileges of forestry reservation commission in leasing rights of way, lands for water-power plants, employing forest rangers, etc.

H. R., 813, appropriating \$3,500 for the purchase of herbarium and library belonging to Dr. Joseph T. Rothrock.

H. R., 826, appropriating \$15,000 to establish recreation camps in forest reserves.

Progress in New Hampshire

Mr. Philip W. Ayres, forester for the Society for the Protection of New Hampshire Forests, writes:

"We have just passed a new law which brings us into the line of the progressive states in having a state forester who works in connection with the state forestry commission of three unpaid members. We have revised our forest-fire laws so that they are excellent, as nearly complete as those in the

other progressive states. Our new state forestry commission is made up as follows: Robert P. Bass, Peterborough, president; J. H. Tolles, Nashua, treasurer; W. Robinson Brown, Berlin, secretary. The commission has appointed a new state forester, E. G. Hirst, a graduate of the Yale Forest School. He previously completed his course at the Ohio State University.

"You will be interested that the plans for the Conference at Bretton Woods are making good progress."

What a State Might Do

The latest statistics in the report of the New Hampshire Forestry Commission state that over 800,000 acres of land, once cleared, have since 1880 been abandoned to grow up in brush, says *Collier's*. If New Hampshire had been the municipality of Zurich, Switzerland, this would have been taken under some form of the doctrine of eminent domain, planted with trees, and in the later generation have become an asset for its people. The people of Zurich once found themselves without the timber needed for its maintenance, for the building of its homes, and took this wise step. To-day, when the expense of operation is paid, the property yields to the government of the city something over \$15 an acre.

What would be the opinion of the generation of New Hampshire citizens thirty years from now of the work of their forebears if they should find themselves possessed of several hundred thousand acres of white pine, planted and managed by a competent state forester, properly accountable to the people, in place of nearly 1,000,000 acres now shorn of forest and abandoned by the plow?

It is within the constitutional power of the legislative branch of the state government of New Hampshire to seize this land, plant it with trees—with white pine for the advancing generation, and with spruce for the remoter descendants.

An issue of bonds, to pay the expenditure necessary for the condemnation, reforestation and guardianship of the growing forests, and redeemable at stated intervals by the sale of the lands back to the people, under definite restrictions to insure the preservation of the forests, would probably reimburse the state for its work. It could then be provided that only a certain portion of the growth should be cut in any year, that the trees of small girth should be spared, and that all the danger of fire caused by allowing the waste to remain within the forest should be prevented by compelling the timber harvesters to remove and burn it.

Doctor Hale, during the recent winter, in one of his addresses, offered the suggestion that towns become the owners of forests just beyond the village limits, as has been done in Zurich. This would act as a supplementary reforestation to that of the state—which would obviously apply only to

the larger areas. It might be wiser to begin the work by degrees, testing its success gradually. But three things are certain—the state of New Hampshire has the power to do this service for the next century; it will return the forests to all but the mountain tops; the desolated lands will become an asset, while now they are unproductive. —*Pueblo (Colo.) Chieftain.*

America's Awful Fire Losses

Fire is one of the wasteful extravagances of the American people.

We have been extravagantly wasteful in the past in building without much regard to the destruction by fire, and in this respect we have nearly bankrupted insurance companies and expended in rebuilding nearly as much as originally invested. Indeed, in some years we burn up more than we actually build. This was notoriously the case in the year of the great San Francisco fire and in the first half of the panic year of 1908. In a normal year, such as 1907, we lost through fire buildings valued at \$215,000,000. Some years we run as high as half a billion dollars in fire losses, and again we get along with a loss of only \$300,000,000.

We have grown so used to fire losses in this country that little attention is paid to one that causes a loss of half a million dollars. Such a fire gets no more than a few lines in the national press unless there are harrowing accounts of lives jeopardized. Even the newspapers are not roused from their apathy regarding fires unless there is something spectacular about them, and it takes a catastrophe that wipes out half a city to induce them to give big scarehead lines. In New York City we suffer an annual fire loss of between \$6,000,000 and \$8,000,000, but only a few of these attract any special attention. It is estimated that it costs the city over \$50,000,000 a year to protect itself from fires, including the private and public protection and equipment and maintenance of the fire department. —George Ethelbert Walsh in *Moody's Magazine*.

The Death of Colonel Fox

All friends of forestry will learn with sincere regret of the unexpected death of Col. William Freeman Fox, of New York State. In its *Field Program* for July, the United States Forest Service publishes the following: "With profound regret, announcement is made of the death, on June 16, of Col. William Freeman Fox, a collaborator of the

Forest Service, and, until June 1, 1909, superintendent of state forests, New York Forest, Fish and Game Commission. Colonel Fox was born on January 11, 1840, at Ballston Spa, N. Y., and served with great credit through the civil war. Later he traveled extensively in Europe, studying forest conditions and the different systems of forest management, and in 1886 entered the service of the state of New York. To Colonel Fox's aggressiveness and foresight is due in large measure the present forest policy of the state. As a collaborator of the Forest Service, he rendered important aid to the Government. Colonel Fox was an associate member of the Society of American Foresters and the author of a number of books on the forests of New York."

The Society of American Foresters, Washington, D. C., has passed resolutions expressing its appreciation of the work of Colonel Fox, of his genial disposition, and of the assistance which he has always been glad to extend to young foresters.

Austin Cary Succeeds Colonel Fox

Austin Cary, assistant professor of forestry in Harvard University, succeeds Colonel Fox as superintendent of state forests, New York Forest, Fish and Game Commission. Professor Cary was for six years forester for the Berlin Mills. He is author of "Six Years of Practical Forestry in a Spruce Tract in Maine," published as a Forest Service bulletin, and also of "A Manual for Northern Woodsmen," published by Harvard University, 1909.

The National Irrigation Congress

Continent-wide interest has been aroused in the seventeenth session of the National Irrigation Congress, which will meet in Spokane, August 9 to 14. Speakers of national reputation will discuss problems of reclamation of arid and swamp lands, deep waterways, forestry, conservation of the Nation's resources, good roads, and home-building. Railroad presidents, financiers, scientists, statesmen, Government officials, engineers, and practical men in other lines of industrial activity have accepted places on the program, and, with from 4,500 to 5,000 delegates, including farmers, orchardists, and truck gardeners; representatives of all parts of the country, and visitors from the East, West, North, and South, there is every indication that the gathering will be the best attended and most important in the history of the organization.

BACK NUMBERS WANTED

The office of CONSERVATION desires a few copies of the issue for November, 1908, for which it will pay twenty cents each.

Any having available copies will oblige by advising this office.

Timber and Coal Lands for Sale

7,100 acres in North Carolina
9,000 acres in Tennessee
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No. 46—41,576 acres in Bath, Highland and Augusta Counties, Va. *Best virgin tract of white oak now standing in Virginia.* All easy logging proposition, 10 to 12 miles from C. & O. Ry. Road would have a water grade on Mill Creek—all easy grades. 160,000,000 feet saw timber, 75 per cent. of which is white oak of finest quality, besides tan bark, ties and other timber. Owner would consider offer of \$8.00 per acre.

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To the Members:

Your Board of Directors conclude their last annual report with the following:

"Inland navigation, deeper waterways, water powers, and economical manufacturing therewith, floods, soils, irrigation, drainage and the public health, as shown in detail by one of our folders, are all fundamentally dependent upon and related to Forestry. This larger field of conservation and utilization of all our natural resources plainly places upon our Association duties which should be heartily assumed, and diligently discharged.

"In closing, it should be said that, in comparison with the work remaining to be done, the work already accomplished by all the forestry forces combined is slight. Destruction of resources proceeds without abatement. Sentiment now developing should be intensified, and focused upon local, state and national governments, that legislation and administration may accomplish the ends without which all our efforts are vain.

"The American Forestry Association is a leading agency for general propaganda in this field. Its efforts are strictly limited by its means. Where it receives hundreds, it should receive thousands of dollars for the prosecution of the great work before it. For this arm of power it looks to its members. Their dues are practically its only resource. Each member may, however, enlist other members, and by so doing, render to his country a patriotic economic service of great value."

Use blank on the following page and enlist another member

Join the American Forestry Association

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I hereby signify my desire to become a member { Annual
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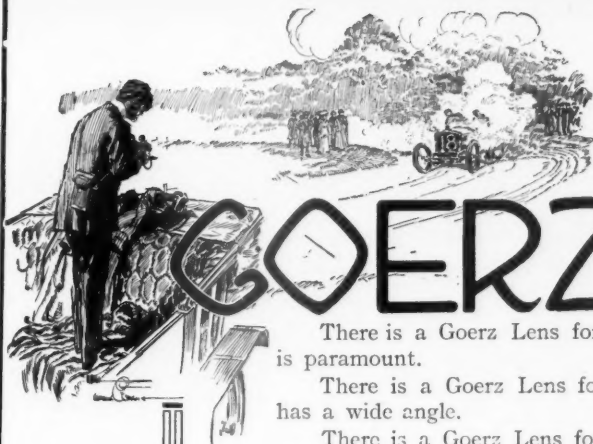
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